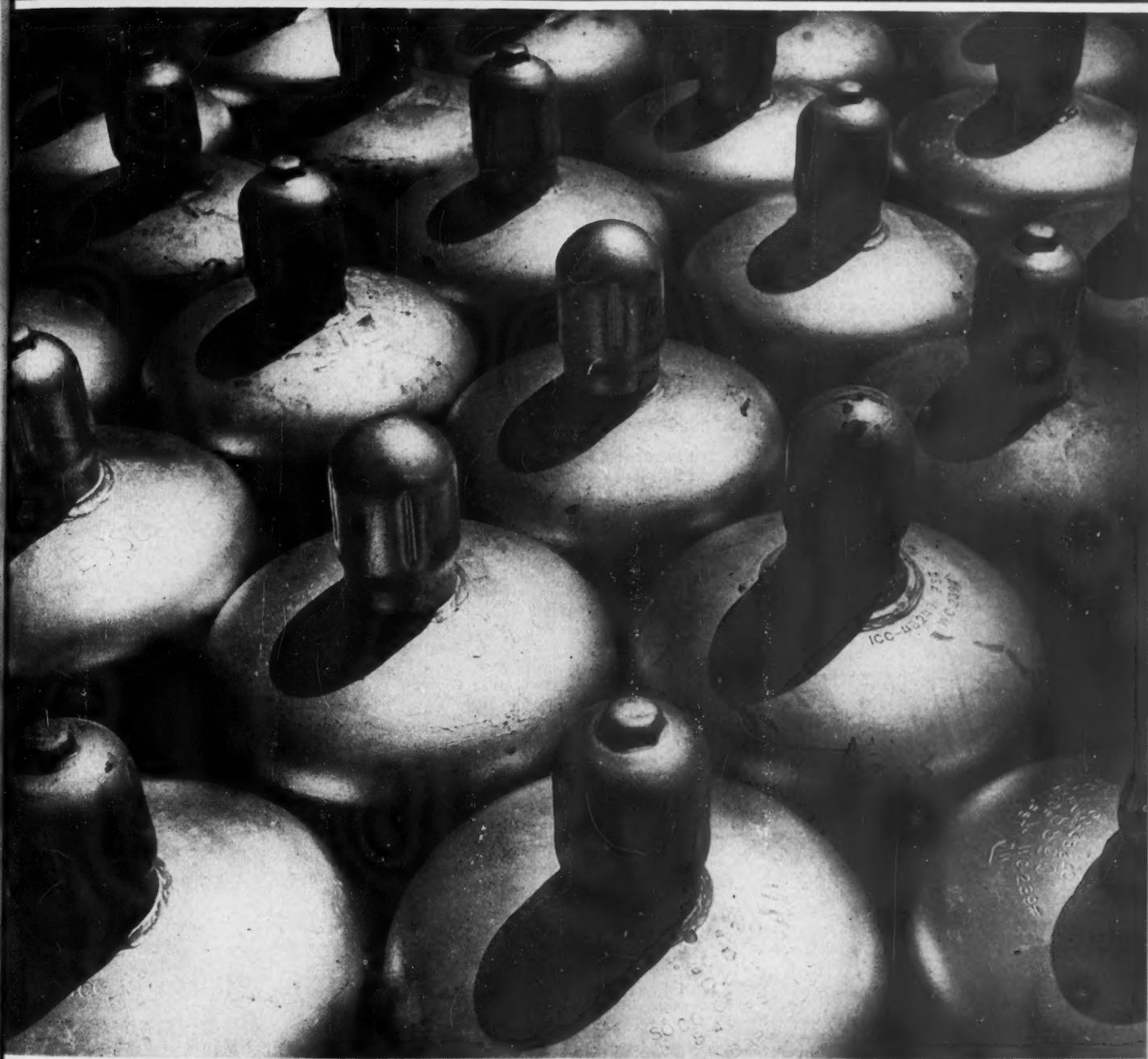


Industrial

May 1947

# Standardization



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# American Standards Association

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## Company Members

Some 2000 industrial concerns hold membership either directly or by group arrangement through their respective trade associations

## Readers Write

### Color Code for "Good Housekeeping"

*American Cyanamid Company  
New York City*

Gentlemen: We are planning to publish a pamphlet entitled "Good Housekeeping," which will be distributed among the management and supervisory groups of this company. Wherever reference is made to the use of a color code the ASA Standard Z53.1-1945 will be referred to.

H. F. GILBERT  
*Safety Director*

• • The standard referred to above is American War Standard Safety Color Code for Marking Physical Hazards and the Identification of Certain Equipment.

### Symbols for Check Valves

*Westinghouse Electric Corporation  
East Pittsburgh, Pa.*

Gentlemen: Our engineering department raises a question regarding check valve symbols 156 and 157, as outlined in American Standards Bulletin Z32.2. The symbols as shown are apparently elevation views and the question is how are these valves shown in a plan view. A number of these valves have been incorrectly installed due to the use of the symbols as now shown. We would appreciate your comments on this question.

F. V. KUPCHAK  
*Standards Engineer*

• • Mr. Kupchak was advised that he was right in assuming that symbols shown in the American Standard for Graphical Symbols for Use on Drawings in Mechanical Engineering, Z32.2-1941, are elevation views, and that it has never been determined just what should be used for plan symbols, if any. A revision of this standard is being considered and it is expected that the question of plan indication for symbols will be taken up.

### Our Front Cover

Standardization of valve outlets for compressed-gas cylinders, such as these 100-lb Essotane cylinders, is important for safety and interchangeability. The bell protectors shown in this picture are used over the valve caps during shipment. (Article on page 105.)

Courtesy Standard Oil Company  
(N. J.). Photo by Bobley.

# Industrial Standardization Vol. 18 No. 5

Published Monthly by AMERICAN STANDARDS ASSOCIATION 70 E. 45th St., N. Y.

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May, 1947

Ruth E. Mason, Editor

35 Cents



Reg. U. S. Pat. Off.

The American Standards Association is a federation of national groups dealing with standardization. Through it, government, industry, labor, and the consumer work together to develop mutually satisfactory national standards. It acts as the authoritative channel for international cooperation in standardization work.

Subscription price \$4.00 per year (foreign \$5.00). Special to schools and libraries \$2.00 (foreign \$3.00). Re-entered at 2nd Class Matter 7/31/43, at the Post Office, New York, N. Y., Act of March 3, 1879.



*Charles Phelps Cushing*

This picture shows a close-up of the spillways of the Wilson Dam, Muscle Shoals, Alabama, one of the units of the TVA system.

*(See article on page 109)*

# *Safety and Interchangeability*

## for Compressed Gas Cylinders

**By Myron E. Steczynski**

Broad program of standardization of valve outlets for compressed gas cylinders has approval of industry and Federal services; foolproof outlet connections are goal of new standards

**T**HE Compressed Gas Manufacturers' Association, representing one of the country's largest and most vital industries, has just completed a monumental task to standardize the valve outlets on cylinders for most compressed gases. For safety's sake, this unified code aims to isolate the valves, regulators, and connections for different gases so that unintentional or dangerous cross-connections cannot be made; and at the same time aims to preserve for the same gas utmost interchangeability between connections which join the gas cylinders to their systems.

A major factor in the wide discrepancy in thread sizes for a given gas outlet is the fact that entirely different industries or manufacturers make and distribute the component parts. The gas producer, the cylinder manufacturer, the valve manufacturer, the fittings manufacturer, and the manufacturer of the regulator of utilization equipment are all involved. This is radically different, for example, from a special thread on a pipe union, because the entire fitting is made as one unit by one manufacturer. In the compressed gas industry the separation of interests comes at the valve outlet.

### War Gave Impetus to Project

The job now done is hailed as one of the blessings emanating from the war. In normal times it would be difficult for all the interested groups to concentrate on this project and to

agree on one standard for the common good. Individual producers or consumers would not want to spend thousands upon thousands of dollars to make changes in their equipment. But the war placed abnormal demands upon both industry and the armed forces, not only within our own country but also among our allies and our forces abroad. The need for a well-defined and unified standard became doubly important. According to the new plan, accidents will be minimized and the problem of making dependable connections will be greatly simplified. It is hoped that no time will be lost in converting to the approved standard.

This standard system combines the best features of the compressed gas industry, the Chlorine Institute, the ammonia industry, the liquefied petroleum gas industry, the medical gases group, and others. In several cases it was necessary to establish entirely new outlets and thread sizes in order to separate some gases from others. The Interdepartmental Screw Thread Committee gave the project broad official sanction by designating the symbol NGO (National Gas Outlet) as a separate and distinct thread symbol to provide for the peculiar needs of the compressed gas industry. The standardization of cylinder valve outlets is placed on the highest possible level, thereby assuring the general acceptance of the broad plans set forth.

Standardized valve outlets are not new, as those for chlorine and oxygen

have been in common use for many years. Some of the old standards did not tie in, however, with the American Standard form of thread and neither were the different outlets properly related to each other to make dangerous cross-connections an impossibility. It remained for the Compressed Gas Manufacturers' Association committee, therefore, to send out questionnaires, to establish fixed principles of design and safety, to define each outlet in detail—finally to arrange a workable over-all scheme, and to get all interested groups to agree. This work has now been completed and has the approval of industry and of the Federal services. About 65 standards are approved for about 37 gases for American and Canadian practice with all details for each gas covered fully on its own standards sheet.

### Representative Committee

The Compressed Gas Manufacturers' Association committee that worked out these standards includes representatives of gas producers, valve manufacturers, the Federal services, American Society of Mechanical Engineers, and others. F. J. King of The Linde Air Products Company of New York is chairman of this active committee; C. Mc L. Pitts of Ottawa is chairman of the Canadian group; and F. R. Fetherston of

**Myron E. Steczynski,**  
*member of the Valve Thread  
Standardization Committee of  
the Compressed Gas Manufacturers'  
Association, is director  
of standards and design, the  
Bastian-Blessing Company, Chi-  
cago.*

New York is secretary. Meetings were held in New York over a period of many months with interested parties especially invited to present their views. The fullest cooperation was secured from groups and individuals specializing in the respective gases, as well as from the Department of Commerce, the Army, and the Navy. Meetings were also held at the National Bureau of Standards in Washington and at the International Conference on the Unification of Engineering Standards in Ottawa, with the participation of leading authorities.

### Cooperation of Many Groups

If it were not for the earnest help and willing cooperation of the many influential groups that gave their knowledge, experience, and support, the splendid results could not have been achieved. Everyone was equally sincere in his desire to see the project succeed. It was a matter of give and take in a project where gas producers and big users will voluntarily spend large sums of money in the conversion to a common system.

### Standard Outlets Promote Safety

Standard outlet connections for the respective gases are made as foolproof and complete as it is possible to make them, consistent with practical considerations. They represent the best existing American and Canadian practices and provide a coordinated plan for the future. In fixing upon the standards, safety and accident prevention have been the prime considerations—convenience and economy have been secondary. Not only is each outlet fully defined, but its relation to every other outlet is fixed. Law and order now prevail to make every outlet safe and sane.

### Detailed Information Given

The simple fact that all details of valve outlets are put down in black and white should prove the biggest step forward in the entire project. Among other data, the report lists the valve outlet and the mating parts for each gas, giving in minutest detail the exact dimensions for the complete connection. Practically all the information is expressed in numbers, with proper manufacturing tolerances, so that the details can always be measured and checked. These recorded data will serve as a foundation for future studies and for pos-

*The Linde Air Products Co*



Acetylene and oxygen, in these two compressed-gas tanks, are used in welding a manhole cover.

sible revisions, should such become necessary.

### The Valve Outlets

Either a single gas, or else several gases which create no hazard if interchanged, are assigned to one outlet. With the exception of outlets having taper pipe threads which seal at the threads, each outlet provides for a seat and nipple, which make a gas-tight joint against leaks, and also provides for National screw threads not in any of the regular series. These threads do not seal but merely hold the nipple against its seat.

### Basic Thread Divisions

The threads on the valves fall into four divisions—right-hand or left-hand (RH or LH) and external or internal (EXT or INT). These four basic divisions are so vital to prevent undesirable cross-connecting that the full designation of each gas outlet thread includes the terms RH or LH and EXT or INT. In general, where practicable, right-hand threads are used for nonfuel or for water-

pumped gases, and left-hand threads for fuel or for oil-pumped gases. Left-hand threads are identified by a groove across the corners of the hexagon nut.

### Foolproof Thread Sizes

The nominal diameters of the threads in each division are spaced far enough apart so they will not engage with the thread of an adjoining size. An allowance (minimum clearance) of 0.0050 in. between the mating parts is established to provide the desired looseness of fit at the threads and to assure uninterrupted interchangeability between products of different manufacturers who lacked a common standard in the past. It is expected that the precise size, form, and relationship of the critical valve outlet elements will be controlled by accurate gages to assure foolproof conditions whereby desirable connections will fit readily and where it will be physically impossible to make undesirable or hazardous connections.

### Canadian Standards

Canadian standards for valve out-

lets parallel those of the United States very closely. Oxygen forms the only exception where the outlet is different for Canada than for the United States. For all other gases, the Canadian standards are exactly the same as the United States standards, but in addition Canada recognizes five alternates not used in the United States. These Canadian alternates are for acetylene, for water-pumped air and nitrogen, and for oil-pumped air and nitrogen.

It is intended to continue the work of the Valve Thread Standardization Committee, especially when problems of conversion and adherence to the new standards are involved. The Compressed Gas Manufacturers' Association will maintain a service of current progress, such as converting

from alternate designs to final standards with the use of approved adapters if necessary. Twenty-three approved adapters are provided to connect a cylinder valve outlet to a regulator, charging connection, or other mating part having a different connection for the same gas. There is now an adapter to take care of any emergency in either the United States or Canada, and to permit the use of all standard valves of either country with the equipment of either country.

It has been suggested to publicize these valve outlet standards throughout the balance of the Western Hemisphere in order to point out accepted American practice and to reduce the number of different outlets creeping into these countries for the same gas. The Compressed Gas Manufacturers'

Association is also attempting to collect all available data on valve outlets now in use in these and in other countries, and would like to have information sent to its office.

Vital data on valve outlet threads are being included in a supplement to Screw Thread Handbook H-28 and will finally be incorporated into the handbook itself when it will be re-issued. In the meantime, those handling compressed gases or those manufacturing valves, regulators, and fittings, as well as toolmakers, gage makers, manufacturers, inspectors, safety engineers, and others can obtain detailed information on the connections for any gas from the Compressed Gas Manufacturers' Association, 11 West 42nd Street, New York 18, N. Y.

## Will Study Legal Use of Standards

Standards Council authorizes new committee to study methods of referring to standards in laws and ordinances; Board of Review to speed approval of standards is appointed

**A** NEW committee to study methods of putting nationally recognized standards and codes into effect in state laws and municipal ordinances will be appointed as a result of action taken by the Standards Council, top technical body of the American Standards Association, at its meeting April 24. This action was taken because of questions that have arisen from time to time as to the legality of references to standards in laws and ordinances. Model references to standards, legally acceptable, would help promote uniformity of technical requirements, particularly in building codes and safety regulations, the Council believes. The decision of the Council to authorize appointment of the committee was taken on recommendation of a conference called by ASA following a request from the National Electrical Manufacturers Association that the ASA approve as American Standard the model state electrical inspection law and municipal ordinance developed by NEMA for use in putting the National Electrical Code into effect.

The Council also authorized appointment of a committee to study a recommendation by the Company Member Committee that the size of American Standards be changed to

8½ x 11 in. and that sizes of vendors' catalogs be studied.

The streamlined procedure which the Standards Council has set up to help speed the development of peacetime standards is now in effect, it was announced at the meeting, members of a Board of Review having just been appointed. This Board now has authority to approve as American Standards proposed standards brought to its attention by the ASA correlating committees. Up to this time, authority for approval of Standards has been exercised only by the Standards Council, which has a membership of 55 national associations, technical societies, and departments of the Federal Government. It is expected that approval by the six-man Board will result in much speedier decisions. The Standards Council will continue to be the final authority, since action by the Board of Review can be appealed.

The new Board of Review has the following membership:

Robert G. Griswold, president, Electric Advisers, Inc., New York, representing the American Gas Association, *chairman*  
A. S. Johnson, assistant vice-president, American Mutual Liability Insurance Company, Boston, Mass., representing the National Association of Mutual Casualty Companies

E. B. Paxton, Standards Division, General Electric Company, Schenectady, N. Y., alternate representative of the American Institute of Electrical Engineers

J. R. Townsend, Materials Engineer, Bell Telephone Laboratories, New York, representing the American Society for Testing Materials

W. C. Wagner, Staff Engineer, Philadelphia Electric Company, Philadelphia, Pa., representing the Electric Light and Power Group

George N. Thompson, Chief, Division of Codes and Specifications, National Bureau of Standards, Washington, D. C., representing the U. S. Department of Commerce

As a further means of speeding the work, the Standards Council has delegated authority to the correlating committees (the technical bodies in charge of the work in each of the different engineering fields) to initiate new projects, approve the personnel and scope of work of sectional committees, and approve the appointment of sponsor organizations. All actions of the correlating committees and the Board of Review are to be reported to the entire Standards Council.

Following a report that the American War Standards had been turned over to the appropriate peacetime committees in all cases in which such committees exist, and that in other

cases, peacetime committees will be organized or the standards dropped, formal action was taken by the Council at the April 24 meeting to withdraw the war procedure of the ASA. This speeded-up method of carrying out the work had been outstandingly successful, it was pointed out at the meeting, having brought about approval of some 150 American War Standards in record time. The Committee on Procedure is being asked to study the war procedure to determine whether any parts of it can be used by the ASA in its regular work.

Three new projects were given final authorization at the Council meeting. One, on specifications for building granite, will cover preparation and installation of granite. The National Building Granite Quarries Association, Inc. and the American Institute of Architects are being invited to serve as sponsors.

A new project on standardization of colors for industrial apparatus and equipment, Z55, requested by the Company Member Committee, is to be sponsored by the Mechanical Standards Committee.

The third new project on V-Belt and V-Belt Drives, B55, will be under the sponsorship of the American Society of Mechanical Engineers and the National Machine Tool Builders' Association. This project was recommended by the Mechanical Standards Committee as a result of inquiries from abroad concerning the standardization of V-belts and V-belt drives.

The resignation of the American Society of Mechanical Engineers and the Society of Automotive Engineers as joint sponsors for the project on ball and roller bearings, B3, was accepted with regret. The sponsorship for the project was officially assigned to the Mechanical Standards Committee.

The proposed American Standard Building Code Requirements for Steel Joist Construction, A87.1, submitted for approval by the American Iron and Steel Institute and the American Society of Civil Engineers, was sent to letter ballot.

In order to include types of conveyors not previously mentioned, the scope of the project on Safety Code for Conveyors, Cableways and Related Equipment, B20, has been broadened to cover "safe construction, elements of design, installation, operation, and maintenance of conveyors and conveying machinery, such as power conveyors, gravity conveyors, pneumatic tubes, etc, but

not including self-propelled steerable industrial trucks."

In connection with announcement of approval of the American Standard Practice for Certification Procedures, Mrs Carol Willis Moffett, chairman of a committee appointed by the ASA Board of Directors, reported that her committee has had its first meeting to make recommendations on steps to be taken in carry-

ing out the principles outlined in the standard. Both this standard and the statement of policy on certification of the National Electrical Manufacturers Association (INDUSTRIAL STANDARDIZATION, March, 1947, page 63) were considered. It is the opinion of this subcommittee that the ASA should assume any responsibility demanded of it in this connection, but no recommendations have been made.

## Gaillard Offers Standardization Course

**A**N intensive five-day seminar on the organization and technique of industrial standardization will be made available by Dr John Gaillard to company standards engineers, educators planning a college instruction course in standardization, and others interested in the subject, at the Engineering Societies Building, 29 West 39 Street, New York, during the week of June 23 to 27. Dr Gaillard is mechanical engineer on the staff of the American Standards Association and lecturer on industrial standardization at Columbia University. He plans a lecture each morning and afternoon of the seminar, followed by round-table discussions of standardization problems with the engineers and educators.

For further information write to Dr Gaillard at 400 West 118 Street, New York 27, N. Y., or phone him at the ASA office. The ten lectures will cover:

1. Development of various types of technical and managerial standards. Significance of the performance standard and the unit of measurement. Essential functions of standardization. Primary function (purpose): coordination. Necessary function (means): temporary stabilization. Interdependence of these two functions.
2. Progress-time curve of the technical development of an industrial product. Three main phases of development. When standardization can be started effectively. Basic and detail standards. Subdivision of specified requirements as a means of building up a flexible framework of standards.
3. Definition and characteristics of a standard. Nominal values, permissible deviations, limits and tolerances. Attitude of different departments in a manufacturing concern toward the tolerance problem. Influence of tolerances on revision and unification of standards. Interchangeability of parts. Selective assembly.
4. Units and standards of length. Definitions of yard and meter. Light-wave basis. International reference temperature for limit gages. Inch-millimeter conversion for industrial use (international). Rounding off numerical values. Significance of limits

in specifications. The statistical approach to the tolerance problem.

5. Limit systems applied to cylindrical fits. Definitions of terms. Preferred basic sizes. Required and permissible extreme conditions of fit. Classes and grades of fit. Basic hole and basic shaft systems. Unilateral and bilateral systems. Review of American, British, and international (ISA) standards. Proposed American-British unification.

6. Gaging specifications. Gagemaker's tolerances and permissible gage wear. Location of zones of permissible variation in gage size in relation to drawing limits of workpiece. Influence of method of gaging on acceptance or rejection of parts. Review of American, British, and Continental practices.

7. The four stages of industrial standardization: in a company; in a technical society or trade association; on a national scale; and on an international scale. The work of the American Standards Association and similar foreign national standards bodies. Influence of World Wars I and II. The former International Standards Association (ISA) and the new International Organization for Standardization (ISO). National and international projects.

8. Organization and development of standardization work in a manufacturing concern, particularly in the mechanical industry. Establishing of company standards through cooperation of the engineering, manufacturing, inspection, testing, purchasing, and sales departments. Importance of top management's attitude. Company standards committee and department. Position of standards engineer. Relations with outside standardization work.

9. Different forms of industrial standardization. Simplification of existing variety by elimination of types and sizes. Redesign of existing series of products to combine reduction of variety with technical improvement. Use of Preferred Numbers (international) in setting up progressive series of sizes, ratings, grades, etc. The preferograph as a comparator for existing series of progressive values.

10. Principles and technique of formulating industrial standards. Balance between strictness and flexibility of specifications. Periodic revisions. Property and process characteristics as elements in product specifications. Form, arrangement, and wording of standards. Use of standards for crystallizing existing practice and for coordinating future activities.

# How TVA Buys with

# Standards



Charles Phelps Cushing

**By Harold B. Hendrix**

*Materials Division Staff, Tennessee Valley Authority*

**A description of how the Tennessee Valley Authority has organized to obtain economies through development and use of standard purchase specifications; standards program is coordinated with U. S. Commodity Catalog System**

**I**N January 1946 a plan was approved and authorized for the standardization of procurement specifications for TVA-wide use. The object of the plan was to establish procurement specifications and standards covering the majority of items of materials and equipment purchased. It had become apparent that many benefits would accrue to TVA if its requirements for materials and equipment, many of which are common between departments, could be covered by well-developed and unified specifications.

By way of explanation, the Tennessee Valley Authority is a corpora-

tion created by Act of Congress dated May 18, 1933. The statute provides for the development of the Tennessee River and its tributaries in the interest of navigation, the control of floods, and the generation and disposition of hydroelectric power. It further provides for the development of new types of fertilizers for use in agricultural programs and for proper conservation, development, and use of the resources of the region.

The Authority's program is carried out through the operation of the several departments, each performing its function, and by all departments working together in the pro-

motion of the combined activities authorized by the Act. The Materials Division of the Department of Property and Supply, which is a service organization, performs the procurement function for the Authority in the purchase of materials and equipment needed by all its departments. Several millions of dollars are spent annually for these materials and equipment.

## **Some Advantages of Standardization**

Many companies and industrial organizations have already established or are initiating standardization programs. Some of the benefits to be realized by TVA from such standardization are as follows:

1. Aid in procurement planning to take advantage of market trends and seasonal variations.



Charles Phelps Cushing

Wheeler Dam, 15½ miles above the Wilson Dam on the Tennessee River, is one of the 16 major dams constructed by the Tennessee Valley Authority

2. Aid in procurement through increased competition, elimination of use of trade names, reduction in explanatory correspondence, and simplification of requisitions, purchase orders, and contracts.
3. Procurement of supplies conforming more closely to industry standards at more favorable prices with better delivery and in larger quantities.
4. Establishment of accurate and complete nomenclature for every item of procurement used in TVA and elimination of inadequate, irrelevant, or obsolete specifications.
5. Elimination of unnecessary requirements, substandard articles, articles of better grade than the service warrants, and reduction in the number of types and sizes of articles and of custom-built articles.
6. Provision of means for consideration and introduction of new and improved products, and for distribution of this type of information and data to principal using departments.
7. Aid in compilation of inventory, stock records, and purchasing statistical data.
8. Simplification of warehouse methods, maintenance of stocks common to more than one department, and transfer and disposal of surplus property.
9. Reduction in number of items stocked, obsolete and slow moving stock, and capital invested in stock.
10. Compilation of a Standards Commodity Catalog, listing all items of procurement, which contributes to the general knowledge of materials and equipment and their proper usage.

#### Organization for the Work

The Authority's Procurement Specifications Standardization Program has been conceived as a TVA-wide cooperative program in which the

principal using departments participate. The basic idea is that through joint action between representatives of the departments using the items, technical requirements and specifications can be developed and coordinated with industrial manufacturers and suppliers to insure purchase of the most suitable and economical items for each and every requirement. According to TVA organization, the Property and Supply Department is responsible for promoting procurement specifications standardization.

**Standardization Committee.**—The Standardization of Procurement Specifications Committee, which functions as an advisory committee to the Director of the Property and Supply Department, is composed of four members, and an executive secretary. It directs the standardization work. A committee representative from an executive and administrative level has been named from each of the following principal using departments:

1. Design Department—Representative of Chief Engineer.
2. Chemical Engineering Department—Representative of Chief Conservation Engineer.
3. Power Department—Representative of Manager of Power.
4. Reservoir Properties Department—Director of Reservoir Properties.

The committee's function is one of establishing policy, formally approv-

ing standards developed, appraising program results, and resolving specification differences between departments which cannot be resolved at lower levels.

**Technical Working Staff.**—The personnel of the technical working staff are appointed by and represent the respective members of the Standards Committee and the Property and Supply Department. The function of this staff is to review and study proposed standards and to resolve technical differences between departments to the end that acceptable standards can be developed for TVA-wide use. Each technical representative is responsible for the coordination within his department of specifications which are to become standard. He has the help of engineers within his department as advisers. Proposed standards, with supporting data and industry's comments, are submitted to these representatives for review and consideration. Suggestions and comments made are summarized and circulated for information and study. Through correspondence and discussion meetings, acceptable standards are gradually evolved and reported to the Standards Committee for approval.

**Property and Supply Department's Standards Staff.**—A Standards Staff is established within the Materials Division of the Department of Property and Supply. This staff assembles technical data and prepares drafts of proposed standards for review and consideration by the technical working staff. These data are obtained from knowledge of department requirements, comments from industry, and investigation of established specifications and standards by governmental, technical, and trade organizations. It has been said that the standards staff performs the basic "spade work" for the program. Personnel of this staff devote full time to the procurement standards work while all others in the program perform the standards work in addition to other regular assignments. The efficiency of the system is indicated by the fact that it operates very economically and yet is organized to take advantage of a wealth of knowledge in the use of materials available from experienced engineers throughout the TVA.

#### Issuance of Standards

After standards have been approved by the technical working staff and the Standards Committee they are referred to the Director of Prop-

erty and Supply Department for promulgation as TVA standards.

The standards developed and adopted under the program are reduced to writing and published in a *Standard Commodity Catalog*. Each item covered is identified by a standards catalog number and bears a comprehensive and complete name. It is accurately described and its specification or specification reference is made complete. Wide use is made of established and recognized governmental, technical societies, and trade associations' specifications and standards in the descriptions.

TVA specifications are written in the absence of suitable established specifications. This is frequently necessary especially for items of equipment when comparatively lengthy and involved specifications are required. This type specification developed to cover related Standards Catalog items is published in a *Standard Specifications Manual*. Cop-

ies of TVA's own specifications from the manual are placed on file with regular sources of supply to clarify materials requirements, to simplify the preparation of its invitations to bid, and to facilitate the submission of bid proposals.

Copies of the *Standards Commodity Catalog* and *Standard Specifications Manual* are widely distributed within TVA for use by all personnel having to do with the selection, procurement, acceptance, or use of materials and equipment. They are published in loose leaf form and are kept up-to-date and expanded as new items are reviewed and made standard.

#### Relation to Federal Catalog System

TVA's plan for the standardization of specifications has been developed to meet the needs of the Authority in the improvement of its supplies program. Careful planning has gone into the organization and

preparatory work to insure a practicable working system from which well-developed standards can be established.

Governmental departments and agencies are cooperating in the development of a U.S. Standard Commodity Catalog System, which is under the direction of the United States Standard Commodity Catalog Board. The program envisions the coordination and promotion of the activities of various governmental agencies towards unification of standards. TVA as a governmental agency is participating in this program.

The plan for the standardization of procurement specifications within TVA provides an organization and a procedure in standards development which meets present needs. In addition to its function of development of mutual standards within TVA, its organization fits into the over-all plan of the Federal Catalog System.

## Seidel and Williams Elected By ASA Consumer Committee

Committees on standards for consumer goods report plans for increasing activity; new work on definitions of terms, soaps and detergents, and women's work clothing under way

NEW officers were elected and recommendations made for more rapid development of standards for consumer goods at the annual meeting of the Advisory Committee on Ultimate Consumer Goods April 18.

Robert A. Seidel, vice-president and comptroller, W. T. Grant Company, is the new chairman of the committee, succeeding Irwin D. Wolf, vice-president, Kaufmann Department Stores, Inc., Pittsburgh. Dr. Faith M. Williams, director, Staff on Foreign Labor Conditions, U. S. Department of Labor, was elected vice-chairman of the ACUCG, succeeding Dr. Dorothy Houghton of Teachers College, Columbia University.

Mr Seidel, a native of Milwaukee, came to W. T. Grant Company from Montgomery Ward, which he joined in 1927 after nine years in the naval service. With W. T. Grant he has served successively as store manager, district manager, assistant retail op-



Robert A. Seidel



Dr Faith M. Williams

erating manager, retail merchandise manager, and merchandise manager of home furnishings. He became comptroller in 1940 and was elected vice-president in 1944.

Dr Williams has been on the staff of the U. S. Department of Labor since 1934 and was formerly chief of the Cost of Living Division of the Bureau of Labor Statistics. She is an authority on diets for city workers

and has served on the International Labour Office Committee on Nutrition and has been a member of the technical staff of the United Nations Food Conference. She has served with the Department of Agriculture and was assistant professor at Cornell University in charge of courses on consumption economics.

The ACUCG at the same time elected to its Executive Committee:

Dr Anna M. Dooley, supervisor of home economics, Newark, representative of the American Home Economics Association

Dr Jules Labarthe, Jr, Senior Industrial Fellow, Mellon Institute of Industrial Research, Pittsburgh, Pa., representing the National Retail Dry Goods Association

Leonard S. Little, manager of the textile service section, E. I. du Pont de Nemours and Company, representing the Synthetic Organic Chemical Manufacturers Association, New York City

E. M. Edgerton, director of the technical control department, Pacific Mills, representing the National Association of Finishers of Textile Fabrics, New York City (re-elected).

During the 12 years that the Advisory Committee on Ultimate Consumer Goods has been in existence, the ACUCG and the technical committees under its supervision have struggled to arrive at final agreements on standards. Their work has been slow and difficult partly because of lack of understanding of the objectives, partly because members of the committees have been too occupied with their own problems to give the necessary time to the work, and

in cases because of indifference on the part of some of the groups concerned.

The rising tide of interest in consumer goods standards brought recommendations at the April 18 meeting for action to be taken by the ACUCG and by the consumer goods committees for speeding work on standards. A committee is to be organized to make plans for an educational program on consumer standards, and a review is to be made of all the projects on which little progress has been shown recently. Standards in the consumer field developed by national organizations will be reviewed to determine whether the organizations concerned might recommend them for approval as American Standards. It was recommended that whenever a part of a proposed standard is completed but it is impossible to reach agreement on the entire standard, the completed part should be submitted for approval. In this way much technical material of value will be made available without delay, the committee declared.

Action is now going forward on consumer projects as follows:

#### Definitions of Terms Used in Retailing, Z36—

*Sponsor:* Bureau of Labor Statistics

The sectional committee has held its organization meeting and has submitted a revised scope to the ACUCG to include in its work the "preparation of statements describing terms for use by the merchandising trade for advertising and labeling copy for the ultimate consumer." Each description is to be worded so as to furnish a clear mental picture of the general external characteristics of an item.

#### Sheets and Sheeting, L4—

*Sponsor:* American Hospital Association

After recommendations are received from a small subcommittee of the manufacturers, which may report within the next three weeks, the sectional committee expects that a draft standard will be circulated to the entire committee. The committee reported that it is now working on minimum standards for five types of sheets. In the absence of standards some manufacturers have already begun to furnish informative labels giving the type of information which will help consumers select the sheets best suited to their use, members of the committee reported.

#### Electrical Appliances—

The sectional committees on Domestic Electric Flatirons, C70; Household Electric Ranges, C71; and Electric Water Heaters, C72, which work under the sponsorship of the National Electrical Manufacturers Association, are meeting May 12, 13, and 14 to consider draft standards recently prepared.

#### Household Refrigerators and Home and Farm Freezers, B38—

*Sponsors:* American Society of Refrigerating Engineers; Bureau of Human Nutrition and Home Economics, U. S. Department of Agriculture

The subcommittee on home and farm freezers is now preparing a draft standard, based on a correlation of material in five drafts prepared by national organizations.

#### Textile Test Methods, L14—

*Sponsors:* American Society for Testing Materials; American Association of Textile Chemists and Colorists

Acting on a recommendation from the sectional committee, the American Standards Association has asked the International Organization for Standardization to assign the secretariat for the international work on textile test methods to the United States.

The committee has selected 62 test methods for textiles already standardized by national organizations and has invited the organizations to submit them to the ASA for consideration as American Standards.

This committee was originally known as the Sectional Committee on Colorfastness. Its title and scope have now been changed to cover all textile test methods.

A subcommittee of the Advisory Committee on Ultimate Consumer Goods is now working on a questionnaire to determine what consumers, retailers, and manufacturers think of some of the methods of test now being applied to textile materials.

#### Women's Work Clothing, L17—

*Sponsor:* Associated Manufacturers of Washable Service Apparel, Inc

The first meeting of this peacetime sectional committee was held February 12 to study the four American War Standards on women's industrial clothing. The first action of the committee is to be an analysis of the size tables. Mansfield Lonie, National Bureau of Standards, who has been at work for some time on Commercial Standards for sizes of garments, is cooperating with the committee on this analysis. It is expected that standards developed by the committee will cover uniforms for nurses, and for restaurant and hotel workers, and women's work clothes of all types.

(Continued on Page 129)

The member organizations and their representatives on the Advisory Committee on Ultimate Consumer Goods are given below. One new group, the Cooperative League of the United States of America, has been added to the membership of the committee.

American Association of Textile Chemists and Colorists, *J. Robert Bonnar*; *K. H. Barnard (alternate)*; *Dr L. A. Olney*; *Dr H. W. Stiegler (alternate)*  
 American Association of University Women, *Dr Faith M. Williams*; *Dr Maxine Sweezy (alternate)*  
 American Federation of Labor, *Margaret Scattergood*  
 American Gas Association, *Clarence H. Waring*; *R. M. Conner (alternate)*  
 American Home Economics Association, *Mrs Guy Moffett*; *Ardenia Chapman (alternate)*; *Dr Anna M. Dooley (alternate)*  
 American Hospital Association, *Dewey H. Palmer*; *Paul L. Burroughs (alternate)*  
 American Institute of Laundering, *Carlyle G. Morton*  
 American Retail Federation, *David R. Craig*  
 American Society for Testing Materials, *A. G. Ashcroft*; *R. E. Hess (alternate)*  
 Congress of Industrial Organizations, *Donald Montgomery*; *John Edelman (alternate)*  
 Consumers Union of the United States, Inc, *Madeline Ross*  
 The Cotton-Textile Institute, Inc, *Charles K. Everett*  
 The Educational Buyers Association, *Bert C. Ahrens*; *William B. Foulk (alternate)*  
 Limited Price Variety Stores Association, Inc, *Clyde T. Nissen*; *Arthur Pite (alternate)*  
 Mail Order Association of America, *G. C. MacDonald*; *W. G. Pauli (alternate)*  
 National Association of Finishers of Textile Fabrics, *E. M. Edgerton*; *Alice C. Moore (alternate)*  
 National Bureau of Standards, U. S. Department of Commerce, *Dr Malcolm F. Pratt*  
 National Electrical Manufacturers Association, *Frank Thornton, Jr*; *L. F. Adams (alternate)*  
 National Federation of Textiles, Inc, *Ralph M. Gutekunst*  
 National Institute of Cleaning and Dyeing, *George P. Fulton*  
 National Retail Dry Goods Association, *Charles W. Dorn*; *H. S. Blackman (alternate)*; *A. D. Egendorf*; *Leon Kapelsohn (alternate)*; *Ephraim Freedman*; *Max Schuster (alternate)*; *Dr Jules Labarthe, Jr*; *T. L. Blanke (alternate)*; *Robert A. Seidel*; *Harry Barth (alternate)*; *Irwin D. Wolf*  
 Synthetic Organic Chemical Manufacturers Association of the U.S., *Leonard S. Little*  
 Tanners' Council of America, *Irving R. Glass*; *J. L. Nelson (alternate)*  
 U. S. Department of Agriculture, Bureau of Human Nutrition and Home Economics, *Dr Earl C. McCracken*  
 U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce, *H. B. McCoy*  
 U. S. Department of Labor, Bureau of Labor Statistics, Consumer Prices Division, *Mrs Ethel D. Hoover*; *Mrs Elizabeth V. Minson (alternate)*

# Changes in Electrical and Photometric Units

**I**N line with decisions of the International Committee on Weights and Measures, the National Bureau of Standards will introduce, as of January 1, 1948, revised values of the units of electricity and of light. While the definitions of the units and the methods of fixing their magnitudes will be different from the present practical systems, the changes in magnitude will be so small as to affect appreciably only measurements of high precision. In certificates for standards and instruments issued by the Bureau during 1947, values will be given in both the old and the new units.

The electrical units of the "international" system will be superseded by those of the "absolute" system. This system is derived from the fundamental mechanical units of length, mass, and time by use of accepted principles of electromagnetism, with the value of the permeability of space taken as unity in the centimeter-gram-second system or as  $10^{-7}$  in the corresponding meter-kilogram-second system. Actually all of the common electrical units fall into the mks system. This change constitutes a return to the basic principle, always recognized as desirable, of having the electrical units consistent with the fundamental mechanical units.

## International Units Now in Use Larger Than Absolute Units

The international ohm and volt now in use are slightly larger than the corresponding absolute units; consequently numerical values of resistance and voltage are slightly larger when expressed in absolute units than when expressed in international units. In the United States the factors recommended for conversion to the absolute basis are 1.000495 for resistances and 1.00033 for voltages. For power or energy therefore the factor is 1.000165, but for most purposes the round value 1.0002 is amply precise.

The new system of photometric units takes as the primary standard

a black-body radiator operated at the temperature of freezing platinum. The "candle," unit of intensity, is defined as one-sixtieth of the intensity of one square centimeter of such a radiator. Other units are derived from the candle, with the provision that when differences of color are involved the evaluation shall be made by means of standard spectral luminosity factors which have been adopted by the International Commission on Illumination and the International Committee on Weights and Measures. For the types of lamps now in common use, the ratings under this new system will be practically the same as those now in effect.

**Electrical Units.**—The international units now in use were intended to be exact multiples of the units of the centimeter-gram-second electro magnetic system; but, to facilitate their reproduction, the ampere, the ohm, and the volt were defined by reference to three physical standards; namely, (1) the silver voltameter, (2) a specified column of mercury, and (3) the Clark standard cell. This procedure was recommended by the International Electrical Congress of 1893 in Chicago and was incorporated in an Act of Congress of July 12, 1894. However, modifications of the international system were found to be necessary or expedient for several reasons. The original proposals were not sufficiently specific to give the precision of values which soon came to be required, and the independent definitions of three units brought the system into conflict with the customary simple form of Ohm's law,  $I = E/R$ . Furthermore, with the establishment of national standardizing laboratories in several of the larger countries, other laboratories no longer needed to set up their own primary standards, and facility of reproduction of those standards became less important than the reliability of the units.

The magnitudes of the international units as now used are the result

of decisions made at an International Conference on Electrical Units and Standards held in London in 1908, supplemented by experimental determinations carried out by an International Technical Committee in Washington in 1910. It was then known that the international units were not exactly concordant with the centimeter-gram-second units, but the Conference decided to retain the ohm as defined by the mercury column and the ampere as defined in terms of deposits of silver. Starting from these two units the Technical Committee established a value (1.0183 volts) for the electromotive force of the Weston Normal Cell. The magnitude of the international volt was changed as of January 1, 1911, to make it consistent with the international ohm and international ampere in the relation  $I = E/R$ . Since that time the international units actually used in this country have been maintained continuously by groups of wire resistors for the ohm and of Weston cells for the volt, without any intentional change in magnitude. National laboratories in other countries have followed almost the same course, although a few determinations by means of mercury columns and silver voltameters have been made as checks on the values of the units, and in some cases the values have been modified in consequence of these determinations.

The change in units has been under consideration for twenty years. In preparation for it laboratories in several countries made absolute measurements of resistance and of current. The results of these measurements and the magnitude of the international units as maintained in the national laboratories of France, Great Britain, Germany, Japan, the USSR, and the United States were correlated by periodic comparisons of standard resistors and of standard cells sent to the International Bureau of Weights and Measures. Nearly all of the absolute measurements at the National Bureau of Standards were carried out

under the direct supervision of Harvey L. Curtis, and the results of such measurements at the Bureau and elsewhere were summarized by him in 1944.\*

The units of the new system will actually be maintained, as were the old international units, by groups of standard resistors and of standard cells, and the change to be made is most simply represented by stating the relative magnitudes of the ohms and of the volts in the two systems. The relations accepted by the International Committee on Weights and Measures at a meeting in Paris in October 1946 are as follows:

- 1 mean international ohm =  
1.00049 absolute ohms
- 1 mean international volt =  
1.00034 absolute volts.

The mean international units to which the above equations refer are the averages of units as maintained in the national laboratories of the six countries which took part in this work before the war. The units maintained by the National Bureau of Standards differ slightly from these average units; the conversion factors for adjusting values of standards in this country will be as follows:

- 1 international ohm (U.S.) =  
1.000495 absolute ohms
- 1 international volt (U.S.) =  
1.00033 absolute volts.

Other electrical units will be changed by amounts shown in the following table:

- 1 international ampere  
= 0.999835 absolute ampere
- 1 international coulomb  
= 0.999835 absolute coulomb
- 1 international henry  
= 1.000495 absolute henries
- 1 international farad  
= 0.999505 absolute farad
- 1 international watt  
= 1.000165 absolute watts
- 1 international joule  
= 1.000165 absolute joules.

The factors given should be used in converting values given in international units in National Bureau of

Standards certificates to the absolute system.

**Photometric Units.**—Units of light have never been established by law in the United States. In 1909 the National Bureau of Standards by agreement with laboratories in France and Great Britain introduced the "international candle"; the agreement, however, did not provide for any primary reference standard. Pending the development of a satisfactory basic standard the "candle" was represented by groups of carbon-filament lamps. As other types of lamps were developed, working standards of the new types were set up independently in various countries. This required visual comparison of lights of different colors, which is very difficult, and led to some diversity of units. Moreover, Germany and Austria never accepted the "international" units of light.

As a result of years of discussion and experimental work on standards of candlepower and on photometry of lights of different colors, it was generally agreed that the best type of primary standard now available is the platinum-black-body radiator, and that lights of different colors can best be evaluated by using luminosity factors representing the spectral sensitivity of the average eye under specified conditions.

These two elements give a basis for a complete system of photometric units when a numerical value is assigned for the brightness of the platinum-black-body standard. Its brightness, expressed in international units, was experimentally determined to be about 58.9 candles per square centimeter. The adoption of the round value 60 candles per square centimeter therefore makes the new unit† about 1.9 percent smaller than the international candle at the color-temperature of the primary standard, and sources of light of such color are correspondingly given higher numerical ratings. However, when sources of higher color-temperature are compared with the basic standards, the standard spectral luminosity factors give slightly lower values for the "whiter" sources than were obtained by the visual measurements by which the present international units were established. The

difference between the two scales therefore grows less as the color-temperature of the sources measured is increased, and for sources in the range of ordinary vacuum tungsten-filament lamps, around 2500 K, the new scale crosses the "international" scale as used in the United States. Furthermore, ratings for gas-filled tungsten-filament lamps and other new types have been made by methods more nearly in accord with the luminosity factors. Consequently the present ratings of tungsten-filament lamps in this country will be practically unaffected by the change of systems, no type being changed by more than 1 percent.

In European countries somewhat higher values have been assigned for light from the high-temperature sources. Consequently use of the new scale will bring about reductions of several percent in their ratings, but these changes will not be so great as would have resulted if the standard luminosity factors had been used to step up from the international candle as represented by carbon-filament lamps.

When the electrical units were defined by law (Public Law No. 105, 53rd Congress) in 1894, it was supposed that the international units were practically identical with the corresponding multiples of the centimeter-gram-second electromagnetic system. Alternative definitions were given for most of the units and those definitions which appear to be legally controlling were taken partly from one system and partly from the other. The joule and the watt, for example, are clearly defined as multiples of the cgs units. In brief, the absolute units have as good a legal basis under the terms of that act as do the present international units. New legislation is being proposed to remove the ambiguities of the old act, but there should be no objection on legal grounds to the general adoption of the absolute units even in advance of Congressional action.

The photometric units now in use were adopted by common consent of those interested, and as previously stated have no statutory basis. The new system might therefore be adopted in the same way, but authorization for it is included in the proposed legislation.

**Names of Units.**—During the period of transition between systems, in order to avoid any doubt as to the units used in giving precise data, the International Committee on

\* Harvey L. Curtis, "Review of Recent Absolute Determinations of the Ohm and the Ampere," *Journal of Research*, National Bureau of Standards, Vol 33 (October 1944), p 235, RP1606. See also A. Pérard, "Les Unités Principales, etc," *Revue de Métrologie*, Vol 22 (January and February 1944) p 3 and 25.

† The new system of units was adopted by the International Committee on Weights and Measures in 1937 and approved by the International Commission on Illumination in 1939.

Weights and Measures has recommended that the adjectives "international" (abbreviation "int") and "absolute" (abbreviation "abs") be

used with the names of the electrical units. Similarly with names of photometric units the use of the adjectives "international" and "new" is

recommended. The use of these distinguishing terms will become unnecessary, except in referring to old data, within a few years.

# Actions on Commercial Standards and Simplified Practice Recommendations

## Commercial Standards

Announced by the Division of Trade Standards,  
National Bureau of Standards

### Automotive Lifts, Recommended Commercial Standard for, TS4344—

This proposed standard covers definitions and specifications for automotive lifts in rated capacities up to 75,000 pounds, inclusive; minimum specifications for outside installations as well as inside installations; and minimum specifications for automotive lifts powered either by compressed air, oil pumps, or electric motors.

### Colors for Molded Urea Plastics, Recommended Commercial Standard, TS4326—

Seventeen colors adopted by the industry as standard are covered in this recommendation which also defines the standard colors in reproducible terms; specifies tolerances; and provides for standard samples and designations to be used by materials manufacturers, molders, and purchasers in specifying the colors desired.

### Doors, Pine (Ponderosa), CS120-46—

This revision of the 1944 edition is designed to establish standard specifications and sizes for ponderosa pine, standard stock doors. It provides minimum specifications in four nominal thicknesses,  $\frac{3}{4}$ ,  $1\frac{1}{8}$ ,  $1\frac{3}{8}$ , and  $1\frac{3}{4}$  inches and covers construction, grades, and tolerances for these requirements.

### Formed Metal Porcelain Enameled Sanitary Ware, Recommended Commercial Standard for, TS4360—

The purpose of this proposed commercial standard is to establish standard specifications, definitions, inspection rules, and methods of tests for formed metal porcelain enameled sanitary ware.

### Hardwood Plywood (Third Edition), CS35-47—

Effective for new production from February 20, 1947, this standard provides minimum specifications for four standard types of hardwood plywood based on the water resistance and durability of the bond, in four standard grades. It covers tests, densities, standard thicknesses, widths and lengths, tolerances, workmanship, packing, inspection, grade-marking and certification, method of ordering, and nomenclature and definitions.

### Materials for Safety Wearing Apparel, Recommended Revision of CS129-46—

This recommended revision, TS4362, covers minimum quality requirements for the material used in the manufacture of safety wearing apparel, including asbestos fabrics, cotton fabrics (flame-resistant), leather, woolen fabrics, and accessory materials. Methods of test are also specified.

### Power Cranes and Shovels, Convertible Full Revolving Type: Crawler, Truck and Wheel Mounted: Including Clamshell, Dragline, Lifting Crane, Hoe, Pile Driver and Skimmer Scoop Equipment (Export Classifications), CS90E-47—

This revised standard is effective for new production from February 15, 1947. It provides requirements, nomenclature, definitions, and information regarding application of machines having shovel dipper capacities ranging from  $\frac{3}{8}$  to  $2\frac{1}{2}$  cubic yards (0.286 to 1.91 cubic meters) and crane capacities ranging from  $2\frac{1}{2}$  to 60 tons (2268 to 54,432 kilograms). It sets up uniform methods of taking dimensions determining working ranges, power, line speeds, line pulls, and lifting capacities for comparison of models offered by manufacturers for export from the United States.

### Shorts (Woven Fabric), Boys' and Men's, CS137-46—

Methods of measuring and standard minimum measurements for boys' shorts and for men's panel back and center seam back shorts, made from woven fabrics are contained in this standard. Specifications are given in detail for measurements covering total length, thigh, width of waist, leg width, front rise, back rise, width across inseam, front opening, and width across seat.

### Sine Bars, Blocks, Plates, and Fixtures, Commercial Standard CS141-47—

Covered in this standard are the major essential requirements for sine bars, sine blocks and sine plates, sine bar fixtures, and sine plate fixtures, in the following

classifications and with particular reference to the following sizes:

- (a) Sine bars, commercial and laboratory classifications, in sizes 5 inches, 10 inches, and 20 inches;
- (b) Sine blocks and sine plates, commercial and laboratory classifications, in sizes 5 inches, 10 inches, and 20 inches;
- (c) Sine bar fixtures and sine plate fixtures, commercial and laboratory classifications, in sizes 5 inches, 10 inches, and 20 inches.

It will be considered as a voluntary standard of the trade from August 15, 1947.

### Standard Strength and Extra Strength Perforated Clay Pipe, Recommended Commercial Standard, TS4368—

This commercial standard covers definitions and requirements for materials, workmanship and finish, absorption, crushing strength, dimensions, and resistance to action of acids, for bell and spigot-type glazed perforated clay pipe of the grades and sizes specified within.

### Testing and Rating Convectors, CS140-47—

The purpose of this standard is to establish standard methods of test for output of convectors, that is, the condensation capacity of steam convectors and the water heat capacity of hot water convectors, and methods for determining, designating, and guaranteeing convector ratings.

### Work Gloves, CS139-47—

Effective for new production from March 6, 1947, this standard covers work gloves and mittens made from cotton flannel, jersey cloth, and fabric-leather combinations for men, women, and children. It includes quality requirements and specifies classes including types or styles.

## Simplified Practice Recommendations

Announced by the  
Division of Simplified Practice,  
National Bureau of Standards

### Air Compressors for Automotive Service Stations and Garages, Proposed Revision of R202-43—

This recommendation was developed in 1943, primarily to conserve scarce and  
(Continued on page 129)

# Statistical Control of Accidents

**By J. M. Howell and Lee Johnson**

*Quality Control Engineer and Safety Engineer, respectively, Northrop Aircraft, Inc., Hawthorne, California.*

Reprinted by special permission of "The Iron Age," this article describes how the statistical method used in control of product quality can be used as a technique for the control of accidents. Preliminary studies of this new approach indicate that it will aid materially in reducing accident rates, the authors declare. This method should not be confused with the American Standard Method of Compiling Industrial Injury Rates now used by the large majority of safety engineers.

STATISTICAL methods have been used to control the quality of manufactured products for several years. Such characteristics as dimensions, weight, hardness, and others have been controlled by the use of charts. The control chart technique has also been successfully applied to many problems other than manufacturing. One of the most interesting of these has been the application to the control of accidents and, from preliminary study, it appears that this application will aid materially in reducing accidents.

In order to show what has been done in this application, it will be necessary to point out some simple aspects of statistical theory. It has been found that, when measurements are made on the height of men, length of leaves on a tree, or dimension of a part, many of the measurements fall near the average of all the measurements, while toward the extremes of the distribution are relatively few measurements, as indicated Fig. 1A. In fact, it is found that, in many cases, these measurements will be very near a certain mathematical curve which is called the normal curve. The normal curve has a mathematical formula which may be expressed in terms of two constants, the average and the standard deviation. When these two constants are known, the curve may be drawn as shown in Fig. 1B.

If the measurements are expressed in terms of the standard deviation ( $\sigma$ ) units from the average, it is pos-

sible to determine the approximate percentage of measurements lying within given distances or limits:

| Limits           | Percent of measurements |
|------------------|-------------------------|
| $a \pm 2 \sigma$ | 95.5                    |
| $a \pm 3 \sigma$ | 99.7                    |

Several statistical distributions approach the normal distributions and the theory of the normal distribution is used to determine limits for most control charts.

The unit used in control of accidents is the number of injuries reported per 1000 manhours worked. The number of reported injuries includes the total count of all first aid, medical (cases seen by doctor), and lost-time injury cases. Lost-time injury cases mean that the severity of the injury has caused the injured employee to miss more than one day of work. For example, if in a given department there were eight accidents for one week, and 4000 hours worked in that department for the period, then the rate would be 2.0 accidents per 1000 manhours. The next week the rate might be 2.5 in-

juries per 1000 manhours. After several weeks have elapsed, an average is determined. On charts that are placed in the shop the average, or central line as it is called, is placed at  $\bar{c}$ . The limits are:

$$\bar{c} \pm 2\sqrt{\frac{\bar{c}}{\bar{n}}}$$

where  $\bar{n}$  is the average number of units for the period on which the average is calculated. In the case of accident charts, the units are injuries per 1000 manhours and the average number of units is the average number of 1000 manhours.

An example of a chart of this type which is posted in the shop is shown in Fig. 2. Since this chart is in plain sight, supervisors and the workers can see at any time what the safety record is, and can see any significant changes. Specific instructions are given employees to report all injuries, no matter how slight, to the plant hospital. An example of the instruction and explanation sheet which is posted with each shop chart is shown below the chart, Fig. 2. Fig. 3 shows data and computations for chart shown in Fig. 2. The charts were first posted in the shop in November. Data prior to that time were analyzed and plotted, but no corrective action was taken on this past data. The limits used in these calculations may be revised at any time that the conditions of operation or the number of men working in a department change considerably.

One might think that there would be a tendency for employees not to report injuries in order to make their chart appear better. This has not been the case, for during the period November to February the total number of injuries have been rather stable, but lost-time injuries have been reduced by approximately 50

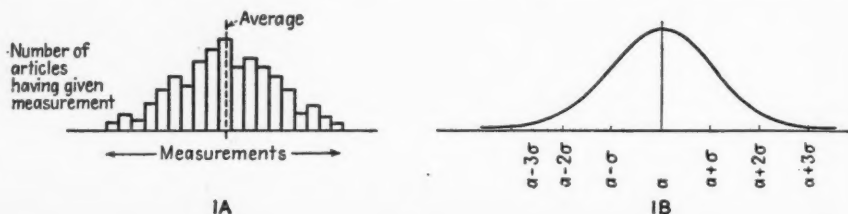


Fig. 1

Two aspects of statistical theory applied to accident control.

## WEEKLY QUALITY CONTROL CHART

DEPARTMENT #14-Production expediting

YEAR 1945

Number of industrial injuries per thousand man hours

DATA BY Lee Johnson

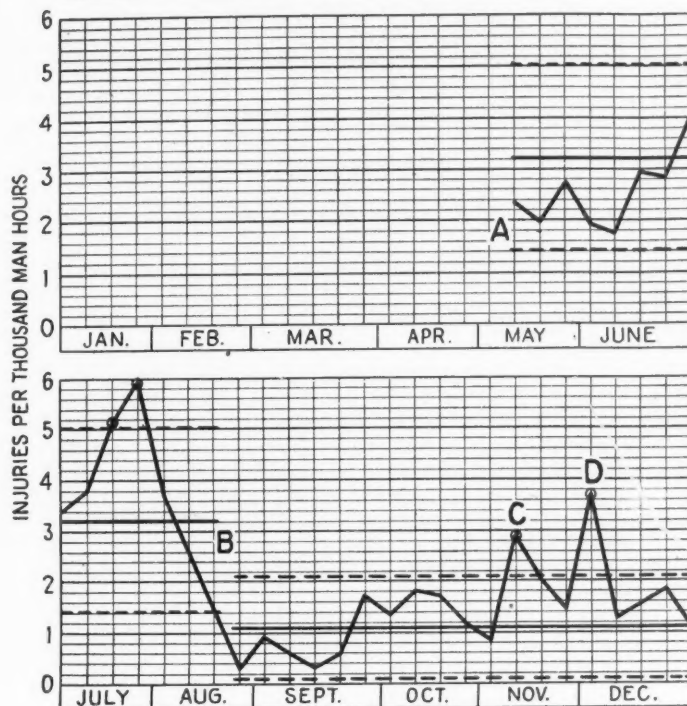


Fig. 2

Weekly chart showing injuries posted in the shop on a bulletin board.

| REMARKS   |      |
|---|------|
| A. Average  | 3.20 |
| Upper limit   | 5.00 |
| Lower limit   | 0.10 |
| B. Average  | 1.10 |
| Upper limit   | 2.10 |
| Lower limit   | 0.10 |
| C. Chart out of control due to employees not wearing safety glasses and other protective clothing when working with paint remover.              |      |
| D. The increase in work injuries were caused by unsafe work practices such as leaving material and equipment where it causes a tripping hazard. |      |

## ACCIDENT CONTROL CHARTS

● This chart shows the number of industrial injuries (including first aid, doctor, and lost-time cases) in this department for each 1000 manhours worked and is posted to give production personnel a weekly record of the accident prevention work.

### Explanation of the Chart

- The center solid line on the chart shows the average number of injuries per thousand manhours worked, based on past performance of the department. The upper (UL) and lower (LL) lines are limits set to maintain this average and show changes in operation conditions.
- A point is placed on the chart weekly to show the accident prevention performance in this department. If this point is within the limit lines it indicates that there has been no significant change in operation conditions. Difference between points inside the control limits are normal, and do not signify a change in operating conditions.
- A point above or below the limit lines indicates that conditions have changed. This is not a reflection against the department—investigation will determine the cause of the change. A point above the control limit indicates an increase in trouble such as an increase of physical work hazards or the inattention of the individuals to work safely, or it could be a combination of both causes, while a point below the control limit indicates improved safe working conditions and improved safety attitude of individuals.

### Use of the Chart

- When a point is within the control limits, no action will be taken. When a point is outside the control limits, the safety engineer will investigate to determine the cause of the trouble. Production is expected to cooperate in determining these causes, and take corrective action within its jurisdiction.

### Improvement in Preventing Accidents

- When the average number of industrial injuries is out of line with good safety practices, production personnel will be expected to aid in the reduction of unsafe work practices in that department. Improvement will be shown by a general reduction in the average value over a period of time.

percent and medical cases have been reduced by approximately 35 percent.

A form similar to that shown in Fig. 4 is also sent each week to all supervisors so they can see relations between departments and also the effect of their department on the division, and the effect of the divisions on the whole plant. The chart shows the breakdown of the plant into divisions, and the divisions into departments where charts are maintained.

A series of charts, called management charts, is made up monthly and distributed to management and supervision. These charts show the number of accidents and rates by division and department. In

order to show all departments with varying rates on the same scale, the following absolute measure is used:

$$t = \frac{c - \bar{c}}{\sqrt{\frac{\bar{c}}{n}}}$$

where  $c$  is the rate for the given week,  $\bar{c}$  is the average rate over the base period and  $n$  is the number of 1000 manhours for the given week. The values plotted on the management charts are then " $t$ " values with the center line at 0, the lower limit at -3, and the upper limit at 3. By this means, departments with different rates may be compared and all departments may be shown on the same type of scale. In addition to the data shown on the management charts, appropriate comments are also shown, to explain any irregularities and to point to correction of undesirable conditions. In general, these comments should be short and specific. Self-explanatory items should be used very seldom, and then only for

| DATA AND COMPUTATION SHEET<br>ACCIDENT CONTROL |           |      |               |  |              |            |                                      |                                |             |  |
|--|-----------|------|---------------|--|--------------|------------|--------------------------------------|--------------------------------|-------------|--|
| WORK SHEET (C)                                 |           |      | PLANT         |  | DIVISION     |            |                                      |                                |             |  |
|  |           |      | MAIN          |  | ASSEMBLY     |            |                                      |                                |             |  |
| DEPT. 14                                       |           |      |               |  | 1945         |            |                                      |                                |             |  |
| WEEK<br>END                                    | TMH.<br>n | INJ. | INJ./TMH<br>C | AVE.<br>C                                | DIFF.<br>C-C | $\sqrt{C}$ | $\sigma = \frac{\sqrt{C}}{\sqrt{n}}$ | $t = \frac{C-\bar{C}}{\sigma}$ | WEEK<br>END |  |
| 5-12   | 4.15      | 10   | 2.41          | 3.20                                     | -0.79        | 1.80       | 0.89                                 | -1.0                           | 5-12        |  |
| 5-19   | 4.10      | 8    | 1.19          |  | -1.25        |            | 0.89                                 | -1.5                           | 5-19        |  |
| 5-26   | 4.10      | 11   | 2.66          |  | -0.52        |            | 0.89                                 | -0.6                           | 5-26        |  |
| MAY  | 12.35     | 29   | 2.56          |  |              |            |                                      |                                |             |  |
| 6-2  | 4.10      | 8    | 1.95          |  | -1.25        |            | 0.89                                 | -1.5                           | 6-2         |  |
| 6-9  | 4.05      | 7    | 1.73          |  | -1.47        |            | 0.90                                 | -1.7                           | 6-9         |  |
| 6-16   | 4.05      | 12   | 2.96          |  | -0.24        |            | 0.90                                 | -0.3                           | 6-16        |  |
| 6-23   | 4.26      | 12   | 2.82          |  | -0.36        |            | 0.87                                 | -0.5                           | 6-23        |  |
| 6-30   | 4.47      | 18   | 4.02          |  | -0.82        |            | 0.85                                 | 0.9                            | 6-30        |  |
| JUNE   | 20.93     | 57   | 2.73          |  |              |            |                                      |                                |             |  |
| 7-7  | 4.68      | 16   | 3.42          |  | 0.22         |            | 0.84                                 | 0.2                            | 7-7         |  |
| 7-14   | 4.79      | 18   | 3.77          |  | 0.57         |            | 0.82                                 | 0.6                            | 7-14        |  |
| 7-21   | 5.10      | 26   | 5.10          |  | 1.90         |            | 0.80                                 | 2.3                            | 7-21        |  |
| 7-28   | 4.85      | 29   | 5.98          |  | 2.78         |            | 0.82                                 | 3.4                            | 7-28        |  |
| JULY   | 19.42     | 69   | 4.60          |  |              |            |                                      |                                |             |  |
| 8-4  | 4.85      | 18   | 3.71          |  | 0.51         |            | 0.82                                 | 0.6                            | 8-4         |  |
| 8-11   | 4.90      | 13   | 2.66          |  | -0.54        |            | 0.82                                 | -0.7                           | 8-11        |  |
| 8-18   | 1.96      | 3    | 1.52          |  | -1.66        |            | 1.29                                 | -1.3                           | 8-18        |  |
| 8-25   | 3.26      | 1    | 0.31          | 1.10                                     | -0.79        |            | 0.57                                 | -1.3                           | 8-25        |  |
| AUG.   | 14.97     | 35   | 2.34          |  |              |            |                                      |                                |             |  |
| 9-1  | 5.16      | 5    | 0.97          |  | -0.13        |            | 0.46                                 | -0.2                           | 9-1         |  |
| 9-8  | 7.16      | 4    | 0.56          |  | -0.54        |            | 0.39                                 | -1.3                           | 9-8         |  |
| 9-15   | 9.16      | 3    | 0.33          |  | -0.77        |            | 0.34                                 | -2.2                           | 9-15        |  |
| 9-22   | 11.12     | 7    | 0.63          |  | -0.47        |            | 0.31                                 | -1.4                           | 9-22        |  |
| 9-29   | 5.24      | 9    | 1.72          |  | 0.65         |            | 0.45                                 | 1.4                            | 9-29        |  |
| SEPT.  | 37.84     | 28   | 0.74          |  |              |            |                                      |                                |             |  |
| 10-6   | 5.12      | 7    | 1.37          |  | 0.30         |            | 0.46                                 | 0.7                            | 10-6        |  |
| 10-13  | 6.00      | 11   | 1.83          |  | 0.76         |            | 0.42                                 | 1.8                            | 10-13       |  |
| 10-20  | 5.84      | 10   | 1.72          |  | 0.65         |            | 0.43                                 | 1.5                            | 10-20       |  |
| 10-27  | 8.00      | 9    | 1.12          |  | 0.05         |            | 0.37                                 | 0.1                            | 10-27       |  |
| OCT.   | 24.96     | 37   | 1.48          |  |              |            |                                      |                                |             |  |
| 11-3   | 8.52      | 7    | 0.82          |  | -0.25        |            | 0.35                                 | -0.7                           | 11-3        |  |
| 11-10  | 3.72      | 11   | 2.96          |  | 1.89         |            | 0.54                                 | 3.5                            | 11-10       |  |
| 11-17  | 4.24      | 9    | 2.12          |  | 1.05         |            | 0.50                                 | 2.1                            | 11-17       |  |
| 11-24  | 4.10      | 6    | 1.46          |  | 0.39         |            | 0.51                                 | 0.8                            | 11-24       |  |
| NOV.   | 20.58     | 33   | 1.61          |  |              |            |                                      |                                |             |  |
| 12-1   | 5.16      | 19   | 3.68          |  | 2.61         |            | 0.46                                 | 5.7                            | 12-1        |  |
| 12-8   | 5.44      | 7    | 1.29          |  | 0.22         |            | 0.44                                 | 0.5                            | 12-8        |  |
| 12-15  | 5.32      | 8    | 1.50          |  | 0.43         |            | 0.44                                 | 1.0                            | 12-15       |  |
| 12-22  | 6.48      | 12   | 1.85          |  | 0.78         |            | 0.41                                 | 1.9                            | 12-22       |  |
| 12-29  | 4.00      | 4    | 1.00          |  | -0.07        |            | 0.51                                 | -0.1                           | 12-29       |  |
| DEC.   | 26.40     | 50   | 1.89          |  |              |            |                                      |                                |             |  |
| NOTE: FIRST AVERAGE                            |           |      | (3.20)        | BASED ON PERIOD MAY 7 TO AUG. 18 INCL.   |              |            |                                      |                                |             |  |
| SECOND AVERAGE                                 |           |      | (1.10)        | BASED ON PERIOD AUG. 21 TO NOV. 10 INCL. |              |            |                                      |                                |             |  |

Fig. 3

Data and computations used in establishing the curve shown in Fig. 2.

emphasis. Examples of these management charts are given in Fig. 5.

It will be noticed that the normal ratings were changed in almost all divisions and departments after V-J day. This was done because conditions changed appreciably. After V-J day, there were fewer inexperienced and female employees than before. The relaxation of wartime pressure on employees and supervision has allowed them to pay more attention to safety. The normal level in one department was also changed during

Fig. 4

Form sent weekly to supervisors indicates relations between departments with respect to accident rates. Injuries above normal which require corrective rates should be noted in color to attract attention.

November since the number of employees was changed about five-fold, and conditions were appreciably changed.

Some of the advantages of the use of quality control techniques as here applied to control of accidents are as follows: (1) Management, supervision, and workers are aware of their accident rate and strive to lower it; (2) variations of such nature as to be significant are quickly noticed and corrective action may be taken; and (3) minor variations which are not significant may be safely disregarded.

*This article is adapted from a paper presented at a meeting of the Southern California Industrial Safety Society.*

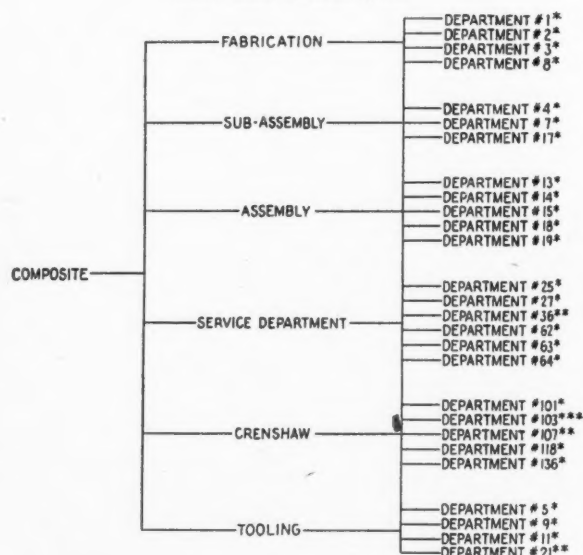
## Bibliography

American War Standard Control Chart Method of Controlling Quality During Production, Z1.3-1942, American Standards Association.

John M. Howell, "Statistical Quality Control—Some American Views on its Fundamental Concepts," Aircraft Production (British), October 1945.

## SUMMARY OF SAFETY CHARTS

WEEK ENDING FEBRUARY 9, 1946



\*-Indicates normal injuries

\*\* -Indicates injuries above normal and requires corrective action

\*\*\* -Indicates injuries below normal

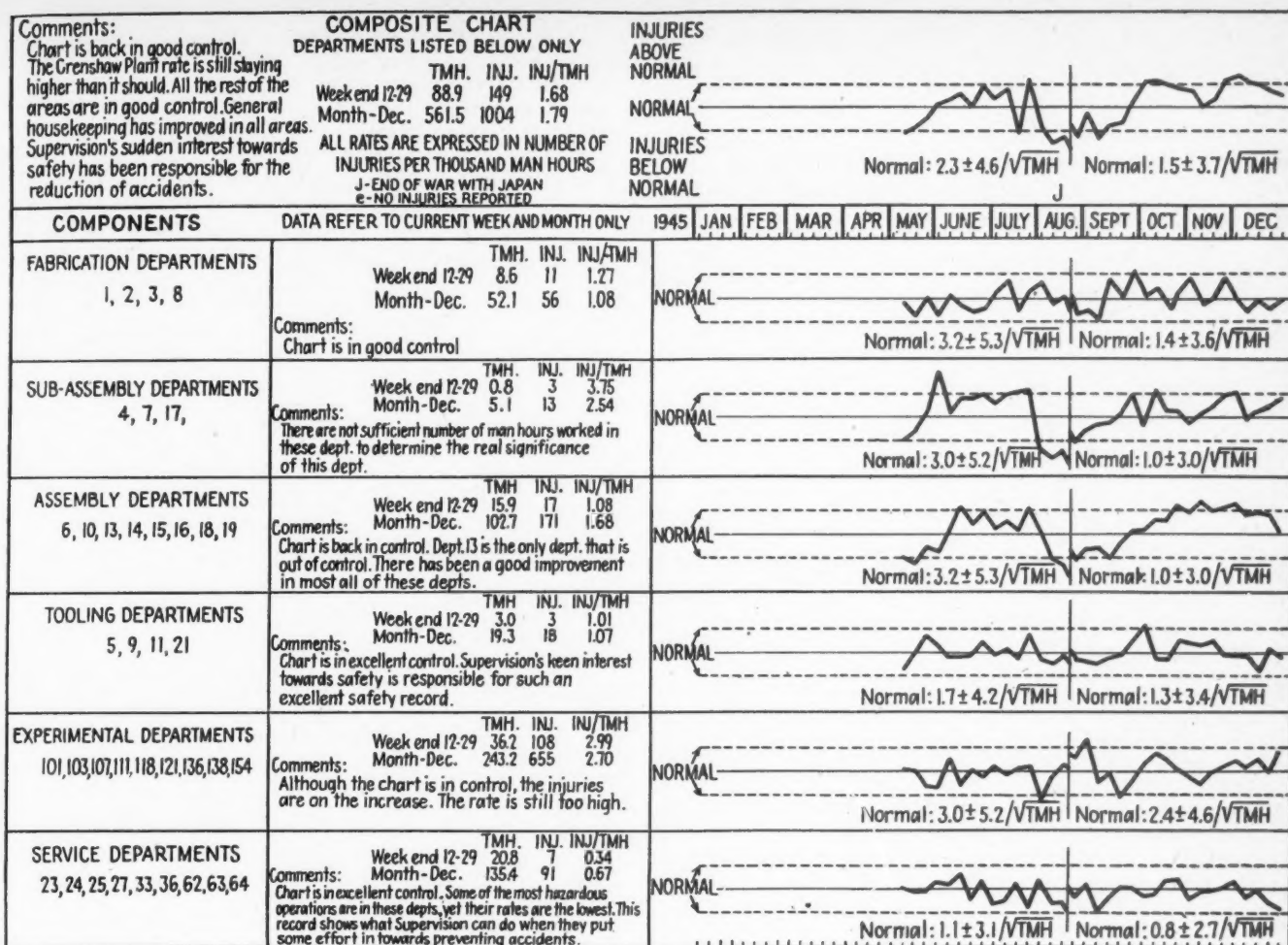


Fig. 5

Charts provided management to show trends in accident rates in various departments. Symbols TMH indicate 1000 manhours; INJ.—injuries; INJ/TMH—injuries per 1000 manhours.

## Committee of Judges Rules On Accident Statistics

THE committee of judges set up under the American Standards Association Committee on Standardization of Methods of Recording and Compiling Accident Statistics (Z16) has made its first 20 decisions covering the recording of doubtful cases, Henry B. Duffus, chairman of the judges and safety engineer of Westinghouse Electric Corporation, has announced.

The decisions of the judges are designed to make the recording of accident frequency and severity statis-

tics as uniform as possible. These frequency and severity rate tables are the principal guides of the safety engineer in checking the efficiency of his program.

The 20 cases already covered by the judges range from those of a plant operated under government contract where it was questionable whether prevalent dermatitis should be included in general company statistics; to the question of a seaman who sustained a broken arm in a rough sea while not on duty.

In the case of the plant operated under government contract, the judges suggested separate accident records should be set up for the government operation and that these should not be combined with those of any other plant, except for the summary for all plants.

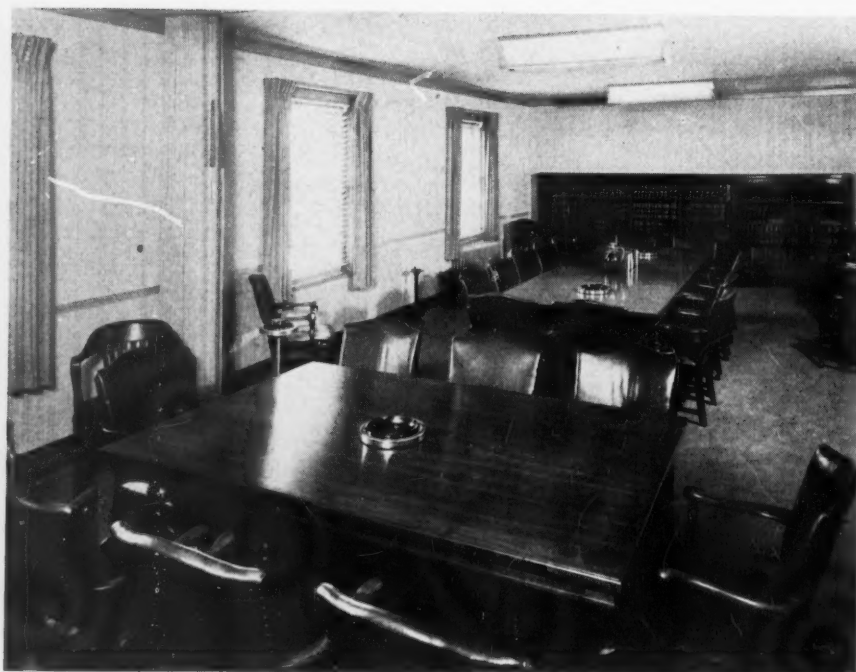
The seaman's broken arm, the judges decided, should not be included in frequency and severity rates.

Mr Duffus announced that safety engineers and others interested could obtain rulings from the committee of judges by submitting a statement of the facts involved to the offices of the American Standards Association.

Copies of the 20 decisions already handed down can be obtained from the American Standards Association without charge.

# ASTM's Spring Meeting

## Dedication of New Building Highlights Committee Week



The Board room of the new building dedicated by the American Society for Testing Materials at its Spring meeting. The new building offers larger reception rooms, committee rooms, and rooms for members, as well as more adequate working space for the staff.

**T**HE new headquarters building of the American Society for Testing Materials was formally dedicated during ASTM Committee Week at Philadelphia, February 24 through 28. Purchase of the four-story building, which is large enough to provide improved working facilities for the Society's staff of some 43 people, was made possible through gifts from ASTM members totaling about \$160,000. It includes a members' lounge, three committee rooms for smaller meetings, and shipping and storage space for the Society's publications.

Dr G. H. Clamer, senior living past president, presented the building on behalf of the membership to ASTM president Arthur W. Carpenter.

At the 250 sessions themselves, for which the registration totaled the highest in the Society's history, a

large number of new tentative specifications and test methods were reported, revisions in existing standards were discussed, and activity in research in materials was covered. Much of the action taken by the committees will be confirmed by letter ballot and referred to the Society at the ASTM Annual Meeting in Atlantic City in June.

Some of the most important actions taken by the committees are reported below:

### Steel, A-1—

Among important developments were approval of standardized procedure for macroetch testing of forgings, new specifications for procuring alloy-steel bars subject to end-quench hardenability requirements, for hot-rolled strip specification, for common bolting, and a standard method of tension testing of spring wire. All are subject to letter ballot.

Subcommittee IV on spring steels approved the new method of tension testing

of spring wire. Similar activities will be undertaken for hot formed helical and elliptical springs.

Because a number of consumers want to order chromium vanadium valve spring wire in the oil tempered (heat-treated) condition, Specifications A 232 will provide for this feature in addition to the annealed material. Modifications were also approved in the tensile values of the hard drawn wire covered in ASTM Standard A 227.

The steel forgings subcommittee made revisions in the former seven emergency specifications for heavy steel forgings for use in turbine and generator parts to place requirements on a peacetime footing.

The subcommittee on steel pipe and tubing reported that pipe specifications A 53, A 120, and A 253 will have tables of specific test pressure for each size incorporated and there will be supplementary data covering threading and including sketches of joints, etc.

Studies on materials for boilers and pressure vessels undertaken during the past year by the subcommittee on steel for pressure vessels and boilers have resulted in the drafting of four proposed specifications.

Definite progress was evident in the work on sheet and strip steel. A needed standard for hot-rolled strip has been virtually agreed on. In the case of the existing standard for cold-rolled strip, A 109, the industry is to be asked whether certain tolerance values on the Rockwell F and T scales for very thin material can be agreed on.

There will probably be added to the current standards A 245 and A 246 (light gage flat structural steel), modified tensile properties and information on gage numbers, thickness, and sheet. Test methods applicable particularly for thin gage material are being studied.

The subcommittee on materials for valves, flanges, and fittings for high-temperature service announced that a specification for bolting for subatmospheric temperatures is being drafted. The specification for alloy steel castings will be changed to include at least four new grades coming into rather extensive usage: chrome-nickel-molybdenum, chrome-molybdenum, 1 percent molybdenum, molybdenum-vanadium.

In the new tentative issued last year for  $\frac{1}{2}$  percent chromium- $\frac{1}{2}$  percent molybdenum pipe, A 280, established to provide material which should inhibit graphitization, the present chromium range of "0.40-0.60" is to be changed to read "0.50-0.70." Under study is another chemical composition with still higher chromium, and a molybdenum-vanadium grade of pipe is also being investigated. A new standard to cover five austenitic grades of stainless steel pipe (as distinct from tubing) is being drafted.

A newly organized subcommittee on machine nuts and bolts considered in detail a proposed standard specification for so-called "common" bolting for general applications.

#### **Corrosion of Iron and Steel, A-5—**

Six new subcommittees have been established to replace the two older subcommittees which, for years, carried on the major portion of activity of this committee. The new groups cover sheet specifications, wire specifications, hardware specifications, sheet tests, wire tests, and hardware tests.

The subcommittee on sheet specifications has completed work on a specification for long term sheets, and, subject to letter ballot, this will be presented at the annual meeting in June for publication as tentative.

#### **Malleable-Iron Castings, A-7—**

This committee voted to ask the Board of Directors to add to its scope the stimulation of research, the development of methods of test, and the definition of terms pertaining to malleable iron. The scope at present includes only the formulation of specifications. The standard specifications for Cupola Malleable Iron (A 197) and Malleable Iron Castings (A 47) including the present tentative revisions were approved.

#### **Iron-Chromium-Nickel and Related Alloys, A-10—**

A report on progress on tabulating the chemical, physical, and mechanical data on cast corrosion and heat-resistant iron-chromium-nickel alloys, and a revision of the publication issued in 1942 on similar wrought alloys were featured at this meeting. The new data book on cast alloys, which will be published with the revised data on wrought alloys, has now advanced to final vote in the committee and should be available before the end of the current year.

The subcommittee on corrosion testing is completing the final details of its new program for atmospheric corrosion testing.

#### **Wires for Electrical Conductors, B-1—**

This committee held an important reorganization meeting in New York City on January 27 to implement its recently enlarged scope which now includes wires of all metals that are used for electrical conductors. Seven subcommittees were established to cover records and editorial, methods of test and sampling procedure, rods for processing into conductors, copper and copper-alloy conductors, conductor of ferrous metals, composite conductors of copper and steel, and conductors of light metals.

#### **Non-Ferrous Metals and Alloys, B-2—**

A proposal to write a specification covering two grades of antimony was approved and a preliminary draft of the specification was reviewed.

#### **Corrosion of Non-Ferrous Metals and Alloys, B-3—**

A study of weather factors affecting corrosion is in the hands of a recently established subcommittee which is studying the availability and usefulness of instruments for measuring such weather factors.

The subcommittee on galvanic and elec-

trolytic corrosion is proceeding with its work on atmospheric tests of stainless steel coupled with other metals, and, in cooperation with Committee B-7 on Light Metals and Alloys, is working out a test program on galvanic couples of light metals exposed to the atmosphere.

The committee also decided to undertake further tests to check on the use of the method of total immersion corrosion test of non-ferrous metals (B 185) and the method of alternate immersion corrosion test of non-ferrous metals (B 192).

A new subcommittee on humidity has been organized.

#### **Electrical Heating Resistance and Related Alloys, B-4—**

Changes were approved in the specifications for nickel-chromium-iron alloy castings (35-15 class) for high-temperature service (B 207) to cover the 38-18 nickel-chromium balance iron grade as well as the 35-15. The committee will also consider test methods which may be useful in determining the suitability of various cast alloys for use in furnace applications.

The diode and data groups of the subcommittee on metallic materials for radio tubes and incandescent lamps have developed a figure of merit for cathode melts and established an approved form of reporting. The chemical subsection reported check analysis on a number of heats of cathode nickel and will prepare, with the metallurgical subsection, report sheets to be used by laboratories making analyses. The metallurgical subsections are working on the identification of nonmetallic elements present in cathode material and the determination of oxides present by the solution method. This, combined with the electrical resistivity determination, may be helpful in estimating the emission activity of cathode materials. The group on physical testing is actively considering the revision of the present method of testing radio tube cathodes, sleeves, and tubing (B 128).

Section B on the evaluation of magnetic permeability is working with Committee A-6 on Magnetic Properties to expedite the test method which has been prepared. Section D on Particle Size is considering the statistical approach on the proposed method of particle size determination. A method of checking the expansivity and transformation of glass seals has been approved.

#### **Copper and Copper Alloys, B-5—**

Among the subjects acted upon by the committee, subject to letter ballot confirmation, were a revision of the chemical composition with respect to additive elements in the several beryllium copper specifications; a clarification of the note governing significance of dimensional tolerances in the various specifications covering wrought materials; and acceptance of the recommendations of Committee E-3 on Chemical Analysis of Metals covering the proper sampling procedure for chemical analysis in the various wrought specifications.

The subcommittee dealing with specifications for sheet, strip, and plate voted to delete from the specification for copper-silicon alloy plate and sheet for pressure vessels (B 96) all tempers except annealed in order to meet ASME pressure code recommendations. The general purpose specifications for the same material (B 97) were amended to include the tempers

deleted from B 96. Plate requirements are to be added to six copper alloy sheet and strip specifications.

The subcommittee on bar and rod voted to add a new alloy to the specification for copper-nickel-zinc alloy rod and bar (B 151) and make some changes in other physical properties in the same specification. The specification for free-cutting brass rod and bar for use in screw machines (B 16) was revised to provide for hard temper in rounds, hexagons, and octagons and for soft temper in rectangles and squares. The specification for copper bus bars, rods, and shapes (B 187) was revised to extend the size range to cover all material used for "bus" purposes.

The subcommittee on wire voted to substitute bend test requirements for elongation values in copper alloy specification for wire sizes  $\frac{1}{4}$  inch diameter and under. The subcommittee on pipe and tube revised the physical properties in the specification for copper water tube (B 88) and changed the upper phosphorous limit to 0.012 percent for type A tube in the specification for seamless copper tubing, bright annealed (B 68) and in the specification for seamless copper tubes (B 75). The subcommittee also is studying the requirements for pneumatic and hydrostatic testing of pipe and tubes and the need for including dehydrated and sealed copper tubing in ASTM standards.

The subcommittee on methods of testing approved a proposed method of tension testing rod and bar.

#### **Die-Cast Metals and Alloys, B-6—**

A special research subcommittee has been planning studies to determine the effects of die-casting variables and has already adopted a standard die for its cooperative tests.

#### **Light Metals and Alloys, B-7—**

The subcommittee on magnesium and magnesium alloys voted to change the copper content of some alloys in the specification for magnesium-base alloys in ingot form for sand castings, die castings, and permanent mold castings (B 93), as well as the specifications for magnesium-base alloy sand castings (B 80), and for magnesium-base alloy permanent mold castings (B 199).

The subcommittee on wrought aluminum reported to the Advisory Committee that it has written a new specification for aluminum alloy extruded shapes which will be presented for action in June.

#### **Electrodeposited Metallic Coatings, B-8—**

The subcommittee on electroplating practice has substantially completed a recommended practice for preparing high-carbon steel for plating.

#### **Lime, C-7—**

Several of the revisions of existing standard specifications dealing with chemical analysis of limestone, quicklime, and hydrated lime (C 25-44) and of definitions (C 51-44) were approved and will now be sent to letter ballot for advancement to standard.

#### **Thermal Insulating Materials, C-16—**

Subcommittee VI functioning in close cooperation with a joint committee on thermal conductivity of all forms of in-

sulation considered a first draft of a proposed method of test using the guarded hot box method for determining thermal conductivity, conductance, and transmittance of materials.

#### **Paint, Varnish, Lacquer, and Related Products, D-1—**

Three new proposed methods cover a method of evaluating degree of resistance of traffic paints to chipping; methods for measurement of film thickness of paint, varnish, and lacquer films; and method of test for nitrocellulose.

#### **Coal and Coke, D-5—**

Action was taken by this committee to recommend the withdrawal of the standard method of sampling coal for analysis (D 21) which covers a laborious procedure of sampling and quartering coal by hand. Plans were made for preparing comprehensive statements on the significance of tests of coal and coke.

#### **Bituminous Waterproofing and Roofing Materials, D-8—**

Changes were recommended in the specifications for asphalts for built-up roofing and also in existing specifications covering roofing felt membranes which will harmonize these specifications more nearly with those of other organizations. An alternate quick method for determining the solids content of asphalt emulsions will be proposed for adoption.

#### **Electrical Insulating Materials, D-9—**

The subcommittee on mica products has had in preparation standards for visual grading of mica. These will be made available in the form of colored transparencies. Samples submitted by the Mica Fabricators Association have been carefully studied and arrangements are now being completed to proceed with the reference standards.

Results of a questionnaire on preparing purchase specifications for insulating papers was reported. One of the first projects will be specifications for laminated papers.

The subcommittee on plates, tubes, rods, and molded materials presented for publication as tentative, new specifications for nonrigid polyvinyl tubing.

The subcommittee on conditioning submitted revised tentative methods for conditioning plastics and electrical insulating materials (D 618) which will now cover five procedures to replace those now referred to as standard and functional procedures.

#### **Rubber and Rubber-like Materials, D-11—**

The subcommittee on protection of persons from electric shock has been reorganized and will undertake a number of projects formerly carried on under ASA War Committee J6 on Linemen's Rubber Protective Equipment. It will function as a sectional committee under American Standards Association procedure. The specifications for rubber gloves (D 120) will be revised and consideration is being given to an ozone resistance test for this type of rubber insulation.

The subcommittee on abrasion tests for rubber products recommended a revision in the Standard Methods of Test for Abra-

sion Resistance of Rubber Compounds (D 394-46) providing for the elimination of Method C which covers the United States Rubber Company abrader.

The subcommittee on adhesion tests presented an extensive revision of the standard method of test for Adhesion of Vulcanized Rubber to Metal (D 429-39) comprising changes in the present procedure to be designated Method A and adding a new Method B. The revised methods also provide a standard adhesion terminology for reporting the results of the test.

The subcommittee on plasticity tests reported preparation of methods covering tests for processability which will include the Mooney viscometer and others.

#### **Soaps and Other Detergents, D-12—**

Three new methods of analysis of soaps and detergents and two new specifications for detergents have been developed by Committee D-12. Subcommittee I on methods of testing reported progress in the development of methods of analysis of dry cleaning soaps. Work is being conducted on an adaptation of the Method for Determination of the pH of Aqueous Solution with the Glass Electrode (E 70) to the determination of pH in solutions of soaps and detergents. A method for corrosion testing of water-soluble aluminum cleaners was approved for submittal to the Society, subject to confirming letter ballot. The addition of a procedure for the determination of starch to the Methods of Chemical Analysis of Soaps Containing Synthetic Detergents (D 820) was approved. Also approved was a correction from 0.90 to 0.93 of the factor for the starch determination in Methods of Sampling and Chemical Analysis of Soaps and Soap Products (D 460).

#### **Water for Industrial Uses, D-19—**

Two methods were approved, subject to letter ballot, referring to the analysis of water-formed deposits. One of these is for the estimation of iron bacteria, the other—an x-ray diffraction method.

A proposed method for reporting the results of analysis of water-formed deposits and a proposed recommended practice for determining the corrosivity of water were adopted by the committee.

Preliminary study has been made for a proposed revision in the tentative recommended practice for the field sampling of water-formed deposits (D 887).

The committee also approved the study and preparation of a method for determination of corrosivity of fluids by service tests.

#### **Methods of Testing, E-1—**

A survey of testing machine characteristics, and facilities provided for speed control, was presented and arrangements were made for publishing a bibliography on speed of testing which will list all articles on this subject, together with a brief abstract.

Technical Committee II on consistency, plasticity, and related properties has undertaken a review of all methods covering this subject now published in the *Book of ASTM Standards* and is collecting descriptions of methods and apparatus for absolute viscosity methods which have been described in various publications. It is planned to publish this information in order to make available a compendium of information on absolute viscosity procedures.

The section on pigment-type materials of Technical Committee III on particle size and shape reviewed the results of a questionnaire on the various types of methods now used in particle size measurement. It was decided to organize three new sections on electron microscope, optical microscope, and gas adsorption.

#### **Chemical Analysis of Metals, E-3—**

A new subcommittee has been organized by the division on ferrous metals to undertake work on high-temperature materials. Other projects of this division include proposed methods for tin, aluminum, beryllium, and boron in steel. Action was taken to approve these four methods subject to letter ballot.

#### **Fatigue, E-9—**

This newly reorganized committee noted considerable progress in the preparation of a proposed Manual on Fatigue Testing. First drafts were at hand for all but two sections of the publication. The committee expects to bring all material together in revised form at the annual meeting in June, in the expectation that the Manual can be made available for laboratory use before the end of the year.

#### **Quality Control of Materials, E-11—**

This relatively new committee has developed plans for a long range program for preparing reports and manuals on such matters as acceptance sampling procedures, planning for the collection of interlaboratory test data, and establishing specification requirements for materials.

### **New Standards Available in ASA Library**

The American Standards Association maintains an up-to-date file of standards received from associations, technical societies, and government agencies. These standards may be consulted by Members at the ASA Library or copies may be obtained from the organization issuing them.

The lists of new standards received in the ASA Library, formerly published in *INDUSTRIAL STANDARDIZATION*, are being discontinued with this issue. The lists of standards received from other countries will be continued for the time being.

## Standards Council Changes in Personnel

New representatives have been appointed to the Standards Council, the top authority on technical work of the American Standards Association, as follows:

### National Electrical Manufacturers Association—

*J. H. Edwards*, Rome Cable Corporation, alternate;

*E. W. Seeger*, Cutler-Hammer, Inc., succeeding *R. W. Larson* as alternate. He is also a representative on the ASA Sectional Committees on Elevators, Dumbwaiters and Escalators, A17; National Electrical Code, C1; Definitions of Electrical Terms, C42; and Electric Fences, C69.

### National Aircraft Standards Committee—

*Gordon T. Waite*, materials engineer, Consolidated Vultee Aircraft Corporation, and chairman of the NASC. Mr Waite also serves as an alternate on the ASA

Sectional Committee on Numbering System for Anti-Friction Bearings, B54.

### Association of American Railroads—

*A. S. Hunt*, chief engineer, Communication and Signal, the Baltimore and Ohio Railroad, succeeding *W. A. Jackson*.



### Oxychloride Cement Association, Inc.—

*W. J. Riley*, Westvaco Chlorine Products Corporation, as alternate for *G. J. Fink*.

intervals at which problems of interest to the industry they represent are discussed. Meetings of the national association are held annually.

The headquarters of the Association are located in Rockefeller Center, New York City, and are in the charge of the secretary, *Joseph C. Fitts*. The officers for the current year are: *Roy M. Getschow*, president; *James M. Anderson*, vice-president; and *Thomas L. Eagan*, treasurer.

## List of Sources Available For Building Codes

A unique research job into the printed source material available for preparing and revising local building codes has just been completed by the ASA Building Code Correlating Committee in cooperation with the National Bureau of Standards of the Department of Commerce.

City and state authorities and other interested groups can obtain the list of 160 important documents for use in framing local legislation from the ASA. The documents themselves are not available at ASA, however.

The BCCC takes no responsibility for the material included in the documents listed, except those developed under its own procedure, but has made the list available, together with sources, as a matter of public service.

The committee assembled the bibliography in the course of its work, which eventually will provide a complete series of building code standards for the guidance of lawmakers, building materials concerns, and public groups.

The documents are drawn from published material prepared by trade associations, state and federal regulatory bodies, taxpayers associations, and a number of safety organizations.

The material covered in the documents listed includes state codes; sections on definitions and classifications; special occupancy requirements; light and ventilation requirements; exits; loads; construction requirements; fire protection and fire resistance; chimneys, flues, and vents; heating appliances; fire extinguishers; precautions during building operations; and electrical, plumbing, and elevator requirements.

## Air Conditioning Contractors Become Member-Body of ASA

THE Heating, Piping and Air Conditioning Contractors National Association, an organization which has functioned in the interests of its industry since 1889, is now a Member-Body of the American Standards Association.

Its membership, numbering approximately 1,000, is composed of corporations, firms, and individuals engaged in furnishing and installing piping systems for such heating and cooling media as steam, water, air, ammonia, brine, and oil. The Association deals with a wide variety of piping systems—steam, hot and cold water heating and cooling, ventilating, refrigeration, air conditioning, temperature control, high and low temperature boilers, oil burners, insulation, sheet metal work, and many others.

Strongly interested in the work of the ASA, the Association has as one of its main objectives assistance in the development of standards for materials and methods used within the industry. In line with this, the Association is one of the sponsors for the Sectional Committee on Pipe Flanges and Fittings, B16, and has representatives on the following ASA sectional committees: Identification of Piping Systems, A13; Chimneys and

Heating Appliances, A52; Pipe Thread, B2; Mechanical Refrigeration, B9; Wrought Iron and Wrought Steel Pipe and Tubing, B36; Unification of Rules for the Dimensioning of Furnaces for Burning Solid Fuel, B50; Ventilation Code, Z5; Drawings and Drafting Room Practice, Z14; Gas Burning Appliances, Z21; Graphical Symbols and Abbreviations for Use on Drawings, Z32; and Safety in Electric and Gas Welding and Cutting Operations, Z49.

Among its other aims, the Association strives for the advancement of the industry through better public service and improvement of the character of the work done and the labor employed.

The management of the Heating, Piping and Air Conditioning Contractors National Association is vested in a board of 15 directors, a president, vice-president, treasurer, and secretary. Its activities are greatly facilitated and decentralized by a group of affiliated associations, of which there are now 33 in active operation. These associations, which may be organized on the basis of local, state, or regional representation, are autonomous in nature but are aided and guided by the national body. They hold meetings at regular



## News from other countries

### China's New Standards Program

**By Dickson Reck**

ON March third of this year in a garden of the former Ch'ing dynasty mint in Nanking, a ceremony was held which formally established the National Bureau of Standards of China. For the many Chinese who have long recognized the importance of standardization for the industrialization of their country this represented the culmination of many years of effort, some of which was successful and some not, but the sum of which resulted in gradual progress in building a national standards program.

#### **Bureau of Weights and Measures First Established in 1930**

The first really successful effort in the organization of standards work was the establishment of the National Bureau of Weights and Measures in 1930 under the Ministry of Industry. The work of this Bureau was at first concentrated on the national unification of weights and measures practice, but in 1931 authority was obtained from the Government to establish a national standards committee. Little interest was aroused, however, and this first effort at a broad standards program failed.

In 1933 another attempt was made, this time to organize a National Bureau of Standards, but the law authorizing it failed to pass the Legislative Yuan. Recognizing the importance of industrial standardization, however, the Ministry of Industry ordered the Bureau of Weights and Measures to carry on industrial standards work until it would be possible to form a Bureau of Standards. In response, the Bureau organized a technical department to undertake the work. During the ten years from

1933 to 1943 this technical staff of the Bureau translated some 3500 foreign standards and drafted quite a number of tentative draft standards for possible use in China. Unfortunately, the Bureau never had the proper authority or organization to develop and promulgate standards and the translations and drafts were of little actual use for guiding industrial development.

In the summer of 1943 the problem of industrial standardization was

*Dickson Reck has been on detail, for the past two and a half years, to the Government of the Republic of China from the Department of State as a specialist in industrial organization and standardization on our cultural cooperation program. He was officially appointed Advisor to the Chinese Standards Committee and during his stay in China his work was largely to assist the Chinese Government in setting up the organization, procedures, and program for national standardization. Before going to China, Mr Reck was head of the Standards Division of the OPA and before that he had been Lecturer in Marketing at the University of Pennsylvania and Assistant to the General Manager of the Square D Company in Detroit.*

brought to the attention of Generalissimo Chiang Kai-shek and he ordered Dr Wong Wen-hao, then Minister of Economic Affairs, to investigate the problem. Dr Wong called a conference in September of 1943 at which the basic principles for standards work and organization were laid down. This work received the approval of the Generalissimo and the Chinese Standards Committee was established under the Ministry of Economic Affairs in December of 1943.

At first the attention of the CSC was devoted to industrial standardization but in 1945 and 1946 its program was broadened to include agricultural products, drugs, and hospital supplies. By March of 1947 sixty standards had been officially promulgated as official Chinese National Standards and several hundred more were being worked on in the ten technical committees and many subcommittees of the organization.

#### **Government, Universities, Industry Represented in Standards Body**

The Chinese Standards Committee provides the single official standards development body in China. Although organizationally it is under the Ministry of Economic Affairs its decisions are made by the vote of its members who are drawn from all Ministries of the Government and from universities and private industry. It and its structure of committees develop standards through the use of procedures which require a consensus of agreement of all interested parties. The principle of organization of the committees also requires that they be composed of representatives of producers, consumers, and other interested parties. They must also be balanced as to whether the members are from Government, private industry, or independent interests. Anyone familiar with the committee work of ASA

would feel at home at a meeting of any of the CSC committees except for the strangeness of the language.

The technical office of the Bureau of Weights and Measures provided the staff for the Chinese Standards Committee work, but this was not completely satisfactory inasmuch as the Bureau had no direct legislative authority for engaging in such work. The CSC itself, as a committee in the Chinese Government, according to Chinese law could not have its own staff, it could not expect to obtain adequate budget for promoting the use of standards, and it had no powers to require the use of standards in those cases where this was desirable.

It was to overcome these difficulties that the Bureau of Standards was formed. As a result of the war the recognition of the importance of industrialization was tremendously heightened in the minds of everyone in China and this time no serious difficulties were encountered in obtaining the legal authority for a Bureau. The law providing the basic authority for the work of the Bureau was finally approved by the Legislative Yuan in September 1946 and the law setting up the actual organization was passed by the same body in February 1947.

The formation of the National Bureau of Standards in March did not change the organization or the functions of the Chinese Standards Committee. The only difference is that the CSC is now attached organizationally to the Bureau instead of directly to the Ministry of Economic Affairs and its work is greatly strengthened by the fact that its legal authority is adequate, the technical staff serving it is larger, and the budget for promotional work is more adequate.

The new Bureau of Standards now combines the work of the former Bureau of Weights and Measures and the Chinese Standards Committee but its powers and responsibilities are extended to include educational programs, certification, and regulations requiring conformance to standards.

The basic law outlines its functions as follows:

1. To serve as the sole agency for coordinating the development of Chinese national standards
2. To provide technical assistance for standards development
3. To extend standards into use by education, certification programs, and regulations
4. To formulate and conduct programs for unification of weights and measures and administer

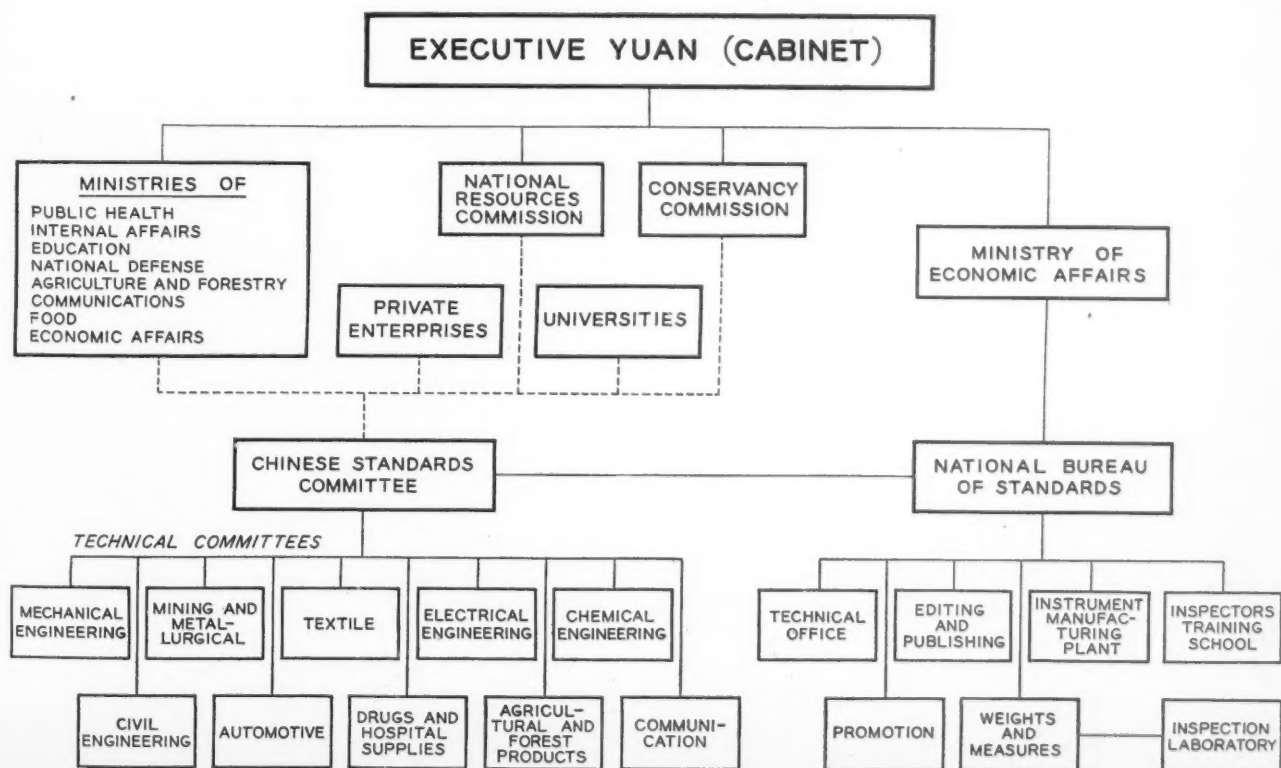
national weights and measures enforcement

5. To serve as the clearinghouse for standards information and questions of all kinds
6. To provide representation for China in international standardization work.

In its weights and measures work the Bureau is responsible for administering all the national laws regarding weights and measures. This includes the problems of supervising the work of the provincial and hsien weights and measures bureaus, of training inspectors for local enforcement work and of approving their qualifications for appointment by local bodies. It also includes the manufacture and calibration of prototype mass, length, and capacity measures for local governments and others, and the manufacture and calibration of other measurement standards.

In its work on technical standardization, the Bureau provides the technical staff for the committees of the CSC. This staff not only acts as technical secretaries for the committees but also compiles comparative translations of foreign standards and may prepare first drafts of standards for the committees. They also are responsible for circulating drafts and

# NATIONAL BUREAU OF STANDARDS AND CHINESE STANDARDS COMMITTEE ORGANIZATION CHART



for compiling the resulting comments.

At present the technical committees of the Chinese Standards Committee cover: mechanical engineering, civil engineering, agriculture and forest products, mining and metallurgy, textiles, automotive industry, chemical industry, drugs and hospital supplies, communications, and electrical engineering.

#### **Standards Circulated for Comment Before Approval by Subcommittees**

These committees operate in the same way as do the sectional committees of the ASA. Representatives of all the different groups concerned are members. Draft standards are circulated for comment to industry, universities, producers, sellers, and users, and to other experts before they are approved by the technical subcommittees.

In addition to its work on standards, the Bureau operated a translating and editing section which maintains a standards library which compares favorably with the library of the ASA. It translates foreign standards into Chinese and Chinese standards into foreign languages. It also edits and publishes standards, and publishes a magazine, as well as bulletins and other printed and duplicated material. The Bureau operates its own printing shop.

One of the important features of the work of the Bureau is that it has the authority and responsibility for educational work, for certification programs, and for preparing regulations requiring the use of standards for promulgation by the Ministry of Economic Affairs and administering such regulations. Potentially this is expected to become one of the most important features of the Bureau's work, although the educational and certification work will be developed first.

Shen-teh Shang, who is known to the ASA staff and many of its members through his work in the past as Secretary-General of the Chinese Standards Committee, has been appointed Assistant Director of the National Bureau of Standards. He retains his post as Secretary-General of the CSC. Cheng Hsiao, Vice-Minister of Economic Affairs and Chairman of the CSC, was appointed Director of the Bureau. It was expected, however, that with the recent changes in the Government a new Director would be appointed.

With the formation of the National

Bureau of Standards a capstone has been placed on the basic organization for a comprehensive standardization program for Chinese science, engineering, industry, agriculture, and trade. The essential structure of standards development committees has been organized. These committees have programmed an inclusive system of standards on which they are working and the procedures for development have been well established. An educational program has been started and the organization is being built for certification and necessary regulation. Starting from scratch, a sound organizational structure has been constructed which provides an efficient mechanism through which the thousands of able scientists, engineers, and businessmen of China can develop the system of standards essential for the industrialization of their country. A good start has been made and the prospects for an effective program in the future are bright.

### **ISO Ratified By 22 Countries**

**Meetings Will Be Held in Zurich, Switzerland, June 17, 18**

Seven additional national standards bodies have now joined in ratification of the constitution and by-laws of the International Organization for Standardization (ISO). This brings to 22 the total number of countries which have approved the ISO as the official body for international standardization work. These latest additions are:

Belgium—Institut Belge de Normalisation (IBN)

Hungary—Magyar Szabványügyi Intezet

Italy—Ente Italiano di Unificazione (UNI)

Netherlands—Hoofdc commissie voor de Normalisatie in Nederland (HCNN)

Norway—Norges Standardiserings-Forbund (NSF)

Palestine—Standards Institution of Palestine

USSR—All-Union Standards Committee

Both Howard Coonley, chairman of the ASA Executive Committee, and Cyril Ainsworth, ASA technical director and assistant secretary, will attend the ISO meetings on June 17 and 18 in Zurich, Switzerland. Mr Coonley is president of the ISO, and Mr Ainsworth will represent the ASA. Mr Ainsworth will also represent the United States National Committee

of the International Electrotechnical Commission at the meeting of the IEC in Zurich on June 16.

### **India Interested in Quality Control**

Prasanta Chandra Mahalanobis, vice-president of the United Nations Statistical Commission and statistical advisor to the Government of Bengal, visited the offices of the American Standards Association recently. Concerned particularly with the problem of quality control, Mr Mahalanobis is interested in obtaining information to be used in organizing that type of work in India. Pitambar Pant accompanied him.

### **Propose Inter-American Conference on Standards**

A recommendation to hold a conference on standardization in conjunction with the Inter-American Economic Conference which is scheduled to take place in the United States later this year, has been submitted to the Inter-American Economic and Social Council. This is a step toward forming a Pan American Standards Committee which was originally proposed by the Brazilian delegate to the Conference of Inter-American Development Commissions in 1944.

### **Peru Sets Up Standards Organization**

Peru is the latest of the Latin American countries to organize a standards body. Its government has set up a national standards office in the Department of Industries. The American Standards Association has already supplied preliminary material and, in due course, the new organization will be equipped with a complete set of American Standards.

Five of the 10 republics of South America now have national standardization bodies. Of the Latin American countries on the North American continent, however, only one—Mexico—has such an organization.

# New Standards from Other Countries

Standards from other countries may be borrowed by ASA Members.

## Great Britain

### New Standards Issued

Air-Depolarised Primary Cells, BS1335:1946  
Guide to Civil Land Aerodrome Lighting, BS1332:1946  
Methods of Sampling Water Used in Steam Generation, BS1328:1946

### Revised Standards Issued

Black Bolts and Nuts: Hexagon and Square BSW and BSF, BS916:1946  
Services and Specification for Brass Strip for QF and SA Cartridge Cases and for Caps, STA18:1946  
Services Specification for "Cap Copper Alloy" Strip for Detonation Shells and Percussion Caps, STA17:1946

## New Zealand

Cow Covers, E230  
Doors, E106

## Foreign Language Standards

The standards listed below are available only in the language of the country from which they were received.

### France

#### Aeronautical—

Dials, Maskings, Needles, and Glass of Panel Board Instruments, L400 01.2  
Electric Cables for Inboard Wiring, L140 55  
Fuel Pumps, Mounting Pad and Drive, L221 00  
Instrument Control Knobs, L400 01.4  
Over-All Dimensions of Round Panel Board Instruments, L400 01.1  
Simple Magnetos, Mounting Flange and Drive, L224 00  
Finances, Banks, Etc—  
A Form for Bank Transaction Record, K12-50  
Mechanical Engineering—  
Globe Valves: Names of Parts, E29-059  
Pipe Fittings: General, E29-052  
Pipe Fittings: Terminology, E29-053  
Valves: General Terminology, E29-054  
Valves: Nomenclature of Discs, E29-055  
Valves: Specifications, E29-056  
Wedge Gate Valves: Names of Parts, E29-057  
Wedge Gate Valves: Types of Construction and Connections, E29-058

#### Metallurgy—

Definition of Principal Metallurgical Products, A40-001  
Vickers Method for Hardness Test, A03-104  
Wood, Glass, Ceramics, etc—  
Chemical Analysis of Refractory Material (Clay, Bauxite, Cyanite, Corindon), B49-401  
Chemical Analysis of Refractory Material (Silicates), B49-431

### France—Continued

#### Wood, Glass, Ceramics, etc—Continued

Commercial Sizes of Poplar Lumber, B53-011  
Wood Used in Building Industry, B52-001

### Italy

Cold Rolled Steel Bars, Various Sections Used in Shipbuilding, UNI 1078-1087, 1278-1280  
Ebonite Sheets, Rods, and Tubes, Rough and Machined, UNI 1255-1263  
ISA Tolerances and Fits System, Both Basic Shaft and Basic Hole, UNI 1088-1139  
ISA Tolerance for Snap and Plug Gages, UNI 1140-1254  
Marine Chocks and Fair-Leads, UNI 1339-1356  
Pipes and Pippings, UNI 1281-1306  
Seasoning of Various Textile Materials, UNI 1319-1335  
Spline Coupling Assembly for Propeller Shafts of Aviation Motors and Details, UNI 1264-1277  
Split Pins, UNI 1336-1338  
Welded Joints, Classification, Nomenclature, Definition, UNI 1307-1318

### Mexico

Definition of Terms Employed in Testing Materials, Official Nomenclature Standard for, C19-1946  
Linseed Oil, Official Quality Standard for, R4-1946  
Potassium Chlorate, Official Quality Standard for, K32-1946  
Precipitated Calcium Carbonate, Official Quality Standard for, K33-1946  
Vitrified Clay Pipes, Modification of, C7-1946

### Netherlands

Armoured Rubber-Insulated Cable, N526-528, 1004, 1280, 1339-1342, 1345, 1366-1375, 1502-1504  
Asbestos-Cement Pipes, N439, 475-477  
Building Materials, N304, 311-313, 359, 529, 574, 618, 698  
Cast-Iron Pipes and Pippings, N837, 838, 908, 1254, 1315-1317, 1332  
Cinematography, N1377-1379  
Dry Pigments, Mineral Oil, N878-890  
Electric Bulbs: Nomenclature, Base Types, N214, 271, 290, 291  
Leather Belts, Pulleys, N1245-1247  
Medical Appliances, N1425, 1448  
Metal Alloys, N1325, 1326, 1417  
Miscellanea (Glass Bottles, Dry Batteries, Radiators, Milk Test, etc), N720, 909, 910, 1005, 1275, 1287, 1291, 1505  
Railroad Material N3:3, 3:11, 1344  
Road Building, Bridge Construction, N896, 1008, 1386, 1387, 2002, 2005  
Rubber Goods, N1001, 1292, 1293, 1423, 1424, 1425  
Scientific Symbols, N1267-1271, 1281  
Shipbuilding, N1274, 1376, 1349, 1350, 1444  
Symbols Used in Technical Drawings, N446-448, 1411-1414  
Textiles: Conversion Tables for Cotton Threads, etc, N905, 906, 911, 912, 1278, 1419, 1446, 1447, 1449  
Thermometers, Vacuummeters, N1294-1296  
Thrust Ball Bearing, N363

### Netherlands—Continued

Tool Steel, Tapers, Bits, etc, N827, 829, 839, 840, 899, 900, 1144, 1282-1285, 1306, 1307, 1313

### Uruguay

Aggregates, Provisional Standard for the Definition and General Classification of, 44P (Defines aggregates according to their origin and sets up a general classification according to grain size)  
Loads To Be Used in Building Design, Provisional Standard for, 33P (Establishes the live and dead loads to be used in the calculation of structures. Contains a list of building materials and their unit weights)  
Plain Round Steel Bars for Reinforced Concrete, Provisional Standard for, 34P (Physical properties of structural, medium strength, and high strength reinforcing steel)

## Need International Standards

"Standardization, in the general sense, is an essential for community life. In order to live together we have to accept some common standards of measurement, of customs, and of morals. In fact, in this sense, the most extreme examples of standardization are to be found in isolated, primitive village life. The rapid development of world-wide contacts, along with the production of goods in immense quantities, and the far-flung network of exchange of goods and of services, has brought us to the other extreme where local or national standards no longer suffice to meet the needs of trade. Of necessity, international standards more or less adequate have been evolved by groups dealing in particular commodities. In some cases these standards now serve very well for international trade, but in most industries difficulties still exist and further development of standard practices is urgently needed."

—E. C. Crittenden, Associate Director, National Bureau of Standards, Department of Commerce

# For Voluntary Standards

Retail executive and president of smelting company go on record for increasing support to American Standards Association

**R**AYMOND H. FOGLER, president, W. T. Grant Company, has urged the chief executives of 60 leading department stores and limited price variety chain concerns throughout the country to increase sharply their monetary support and to make wider use of the machinery of the American Standards Association.

In explaining his independent action in writing to retailers Mr Fogler, whose company operates about 500 retail outlets throughout the country, emphasized the fact that he believed retailing as well as other

sections of private industry must either take active steps to develop nation-wide voluntary standards or resign itself to the creation of such standards by government fiat.

"Irrespective of our opinions as to how best to approach the matter of improved standards and specifications," Mr Fogler wrote, "we can all agree that the program might much better be developed by business itself than inflicted upon us by government."

With over 2,000 companies already supporting the greatly augmented 1947 budget of \$609,000 for ASA

activities, Mr Fogler declared that retailing must carry its own share of the outlay necessary to keep standards in the hands of the technical, trade, consumer, and governmental bodies, and the company members which comprise ASA's national standards federation.

Greater activity in the consumer goods field to a considerable extent has accounted for the increase in the ASA budget to the present \$609,000, from the prewar figure of approximately one-fifth that amount, Mr Fogler said.

If retailers are to meet the pressure from their customers for adequate standards to assure the quality of the goods they buy and to assure the delivery of specified supplies from their manufacturing sources, they cannot shirk their part in the job of setting national standards, Mr Fogler said.

## ASA Company Members

Through their participation in and financial support of the American Standards Association, the following companies are among those that now have an active part in the national standardization program:

American Zinc, Lead & Smelting Company, St Louis, Missouri  
H. C. Baxter & Brothers, Brunswick, Maine  
Cluett, Peabody & Company, Inc, Troy, New York  
Comstock Canning Corporation, Newark, New Jersey  
Container Corporation of America, Chicago, Illinois  
Crown Zellerbach Corporation, San Francisco, California  
Glenmore Distilleries Company, Louisville, Kentucky  
W. T. Grant Company, New York, New York  
The J. L. Hudson Company, Detroit, Michigan  
Koppers Company, Inc, Pittsburgh, Pennsylvania  
S. S. Kresge Company, Detroit, Michigan  
Manning, Maxwell & Moore, Inc, New York, New York  
McCrory Stores Corporation, New York, New York  
National Distillers Products Corporation, New York, New York  
National Malleable & Steel Castings Company, Cleveland, Ohio  
Pittsburgh Plate Glass Company, Pittsburgh, Pennsylvania  
Proctor & Gamble Company, Ivorydale, Ohio  
Remington Rand, Inc, Stamford, Connecticut  
Sears, Roebuck & Company, Chicago, Illinois  
Seeger Refrigerator Company, St Paul, Minnesota  
Thompson Products, Inc, Cleveland, Ohio  
Wagner Electric Corporation, St Louis, Missouri  
F. W. Woolworth Company, New York

## American Zinc, Lead and Smelting Company

HOWARD L. YOUNG  
PRESIDENT

1600 PAUL BROWN BUILDING  
SAINT LOUIS 1, MISSOURI

April 10, 1947

Mr. Howard Coonley,  
Chairman of the Executive Committee,  
American Standards Association,  
70 East 45th St.,  
New York, 17, N. Y.

Dear Mr. Coonley:

I was greatly interested in the talk I had with you and Donald Armstrong recently on the program you are directing to return the control of standards to free enterprise. I was particularly glad to know that an agreement had been reached between the committee chairmanned by C. E. Wilson, President of General Electric, and the Department of Commerce which encourages the development of a strong and vigorous private organization, independently financed, to take the leadership in the development of standards.

There is no question but that the metal industry has a very substantial stake in the ASA program: first, in the broad policy considerations which involve the responsibilities of industry for self-regulation and second, the opportunities for production economies growing out of a sound national standards program guided and carried forward by business itself. I think if every executive would go down the line and talk with his own engineers about the potential savings through standards, there would be no question as to the validity of your case.

My own company is very glad to authorize a membership in the American Standards Association of \$1,000.

Sincerely yours,

*H. L. Young*  
President.

## **Actions on Commercial Standards and Simplified Practice Recommendations**

### **Simplified Practice Recommendations**

*(Continued from Page 115)*

critical materials for the needs of the armed forces. It is the purpose of this revision to adapt a wartime measure to peacetime needs, by listing the sizes, types, and capacities of compressors that currently are in general use and demand, and are regarded as affording an adequate selection for stock-purposes. A further purpose is to broaden the scope of the recommendation.

#### **Galvanized Woven Wire Fencing and Barbed Wire, R9-47—**

This revision of Simplified Practice Recommendation R9-28, Woven Wire Fencing, presents a simplified list of various designs of the following types: farm fence, close-mesh fence, wolf-proof fence, poultry and garden fence, chick fence, galvanized barbed wire, and galvanized two-ply barbed wire. Illustrations are included to show each kind and design of fencing. The purpose of the recommendation is to eliminate avoidable waste through identification of these varieties of fence and barbed wire that have the greatest usage.

#### **Iron Valves, R184-47—**

As revised, this recommendation applies to the usual types of iron gate, globe, angle, and check valves for primary pressures of 25-, 125-, 150-, and 250-pounds, and 100- and 800-pound pressures for water, oil, and gas. A simplified range of sizes is given for the various types and kinds of valves for each of the pressure ratings.

#### **Lavatory and Sink Traps, R21-46—**

This is the first revision of the original recommendation which became effective in January 1925. It contains six tables of various types of traps showing sizes and styles recommended for stock production. One table, containing two items of cast traps with swivel tee inlet for sink and tray combination, is new to the recommendation with this revision. Although the total number of items now listed in all tables shows a reduction of about 40 percent from the total items comprising the original recommendation, it is the belief of the proponents that they will adequately serve all normal requirements.

#### **Pallets for the Shipping of Groceries and Packaged Merchandise, (Proposed) Simplified Practice Recommendation—**

The purpose of this proposed program is to assist the industry in attaining, through pallet simplification, economies in mass distribution comparable to those now

possible in mass production. It is intended to provide for as large unit loads as feasible in warehouse handling and in shipping of goods intact on pallets from the processor's plant to the distributor's order-assembly line, and thus to eliminate the avoidable waste inherent in piecemeal handling and rehandling of individual packages. The present variety of pallet sizes in warehouse use will be greatly reduced on adoption of the proposed recommendation and it is believed that the selected sizes are not only adapted to both freight car and truck dimensions, but also to warehouse requirements, and are especially suitable for the sizes of containers which carry a major proportion of food tonnage.

#### **Pipe Fittings, Proposed Revision of R185-42—**

The original recommendation became effective January 1, 1942, and subsequently served as a basis for mandatory orders issued by the War Production Board. Following revocation of the last of these orders, this revision was drafted. It applies to gray cast iron, malleable iron, and brass or bronze fittings. Fittings to which the recommendation does not apply are listed. As finally adjusted, the proposed revision now includes a comprehensive group of fittings required for sprinkler systems, in addition to the regular lines for other purposes. The section dealing with brass or bronze fittings has been adjusted to provide for sectional as well as general needs.

#### **Range Boilers and Expansion Tanks, Proposed Revision of R8-42—**

The proposed revision would add a double extra heavy grade for each size range boiler included in the current issue. It would also add a 10-gallon expansion tank and would expand the scope of the recommendation to include galvanized solder tanks. Five sizes are listed for stock production.

#### **Surgical Gauze, Revision of R86-42—**

First promulgated in 1928, the first issue contained an approved list of 38 varieties of surgical gauze and gauze products. The recommendation was revised in 1937, 1941, and 1942, all of these revisions accomplishing changes and reductions in variety, made advisable by changing needs and requirements of the profession and the trade. The current revision will reduce the 25 items in the superseded issue to 19, with a further reduction of 5 put-ups for surgical gauze in 100-yard bolts. An important feature of the revision is the change in the 44 x 40 gauze weave to 44 x 36. This change has already been made in the Federal Specification for gauze and it has also been proposed for the new pharmacopoeia by the Committee of Revision of the *Pharmacopoeia of the United States*. The revised recommendation will be effective from June 1, 1947.

#### **Welded Chain, R100-47—**

Containing 35 tables of sizes and finishes of that many kinds and types of welded chain for industrial, harness, and agricultural purposes, the items listed are expected adequately to serve all regular requirements.

## **"Flammable" vs "Inflammable"**

The inconsistencies of the English language have long been a source of irritation to students of the subject. Now, these same annoyances may indirectly be the cause of fire hazards.

The Greater New York Safety Council reports that many housewives have been under the impression that the word "inflammable" means "nonflammable" and, thus, have been none too careful in handling certain canned or bottled fluids which are easily ignited. Crux of the problem rests in the general belief that the prefix "in" always means "not." For greater home safety, the Council and other groups have been urging the use of the words "flammable" and "nonflammable" and elimination of the word "inflammable" to avoid such misunderstandings. National organizations working on fire prevention standards, such as the National Fire Protection Association and the American Society for Testing Materials, have already adopted this practice. The word "flammable," not "inflammable," is considered correct for use in all American Standards.

## **Seidel and Williams Elected by ASA Consumer Committee**

*(Continued from Page 112)*

### **Women's Nylon Hosiery—**

It is expected that a committee will be organized in the fall.

### **Women's House Dresses—**

The Executive Committee of the ACUCG is to consult with the Committee on New Projects to determine what procedure should be followed in lining up a sponsor for this project.

### **Soaps and Detergents—**

The ACUCG has recommended that the ASTM be invited to review its standards on soaps and detergents with a view toward presenting those suitable for consideration as American Standards. Because many of the ASTM standards were developed particularly for industrial use, it has been suggested that this project should be limited to soaps for household laundering and dishwashing. Standards are needed by home makers at the present time because of the recent flood of new synthetic detergents, the committee believes.

# ASA Standards Activities

## American Standards Approved

Abrasion of Coarse Aggregate by Use of the Los Angeles Machine, ASTM C131-46; ASA A37.7-1947 (Revision of ASTM C131-44; ASA A37.7-1945)

Sieve Analysis of Fine and Coarse Aggregates, ASTM C136-46; ASA A37.8-1947 (Revision of ASTM C136-39; ASA A37.8-1943)

Methods of Testing Molded Materials Used for Electrical Insulation, ASTM D48-46T; ASA C59.1-1947 (Revision of ASTM D48-46T; ASA C59.1-1944)

*Sponsor:* American Society for Testing Materials

Pressure Piping, B31.1b-1947 (Supplement to B31.1-1942)

*Sponsor:* American Society of Mechanical Engineers

Dimensions of Moulded Type Cores for Photographic Film and Paper Rolls, Z38.1.48-1947

*Sponsor:* Optical Society of America

Nomenclature for Milling Cutter Teeth, B5c1-1947 (Supplement to B5c-1930)

*Sponsors:* American Society of Mechanical Engineers; National Machine Tool Builders' Association; Society of Automotive Engineers, Inc

Practice for Certification Procedures, Z34.1-1947

*Sponsor:* Association of Consulting Chemists and Chemical Engineers, Inc

Socket Head Cap Screws and Socket Set Screws, B18.3-1947 (Revision of ASA B18.3-1936)

Slotted and Recessed Head Screws, B18.6-1947 (Revision of ASA B18c-1930)

*Sponsors:* American Society of Mechanical Engineers; Society of Automotive Engineers

## American Standards Reaffirmed

### Gas-Burning Appliances—

Listing Requirements for Flexible Gas Tubing, Z21.2-1938 Reaffirmed 1947

Approval Requirements for Private Garage Heaters, Z21.4-1932 Reaffirmed 1947

Approval Requirements for Clothes Dryers, Z21.5-1940 Reaffirmed 1947

Approval Requirements for Incinerators, Z21.6-1932 Reaffirmed 1947

Approval Requirements for Gas Heated Ironers, Z21.7-1932 Reaffirmed 1947

Approval Requirements for Hot Plates and Laundry Stoves, Z21.9-1940 Reaffirmed 1947

Listing Requirements for Draft Hoods, Z21.12-1937 Reaffirmed 1947

Approval Requirements for Industrial Gas Boilers, Z21.14-1934 Reaffirmed 1947

Approval Requirements for Gas Unit Heaters, Z21.16-1940 Reaffirmed 1947

Approval Requirements for Refrigerators Using Gas Fuel, Z21.19-1941 Reaffirmed 1947

Listing Requirements for Automatic Pilots, Z21.20-1940 Reaffirmed 1947

Listing Requirements for Automatic Main Gas-Control Valves, Z21.21-1935 Reaffirmed 1947

Listing Requirements for Relief and Automatic Gas Shut-Off Valves for Use on Water Heating Systems, Z21.22-1935 Reaffirmed 1947

## American Standards Reaffirmed—Continued Gas-Burning Appliances—Continued

Listing Requirements for Gas Appliance Thermostats, Z21.23-1940 Reaffirmed 1947

Listing Requirements for Semi-Rigid Gas Appliance Tubing and Fittings, Z21.24-1941 Reaffirmed 1947

Listing Requirements for Attachable Water Heating Units, Z21.26-1941 Reaffirmed 1947

Approval Requirements for Portable Gas Baking and Roasting Ovens, Z21.28-1941 Reaffirmed 1947

Listing Requirements for Furnace Temperature Limit Controls and Fan Controls, Z21.29-1941 Reaffirmed 1947

Approval Requirements for Gas Counter Appliances, Z21.31-1941 Reaffirmed 1947

Listing Requirements for Gas Appliance Connectors of Flexible Metal Tubing and Fittings, Z21.32-1942 Reaffirmed 1947

Requirements for Installation of Gas-Burning Equipment in Power Boilers, Z21.33-1942 Reaffirmed 1947

Approval Requirements for Gas-Fired Duct Furnaces, Z21.34-1942 Reaffirmed 1947

*Sponsor:* American Gas Association

Hot Rolled Copper Rods for Electrical Purposes, ASTM B49-41, ASA H4.7-1942 Reaffirmed 1947

*Sponsor:* American Society for Testing Materials

### National Electrical Safety Code, C2—

Safety Rules for Installation and Maintenance of Electrical Supply Stations, C2.1-1941 (NBS Handbook H31) Reaffirmed 1947

Safety Rules for the Installation of Electric Supply and Communication Lines, C2.2-1941 (NBS Handbook H32) Reaffirmed 1947

Safety Rules for the Installation and Maintenance of Electric Utilization Equipment, C2.3-1941 (NBS Handbook H33) Reaffirmed 1947

Safety Rules for the Operation of Electric Equipment and Lines, C2.4-1939 (NBS Handbook H34) Reaffirmed 1947

Safety Rules for Radio Installations, C2.5-1940 (NBS Handbook H35) Reaffirmed 1947

*Sponsor:* National Bureau of Standards, U.S. Dept of Commerce

## American Standard Withdrawn

Approval Requirements for Gas Hair Dryers, Z21.25-1937

*Sponsor:* American Gas Association

## Standards Being Considered for Approval

Building Code Requirements for Steel Joist Construction, A87.1

*Sponsors:* American Iron and Steel Institute; American Society of Civil Engineers

Shaft Couplings, Integrally Forged Flange Type for Hydro-Electric Units, B49.1 (Revision of ASA B49-1932)

*Sponsor:* American Society of Mechanical Engineers

## Standards Being Considered for Approval—Continued

Practice for Street and Highway Lighting, D12

*Sponsor:* Illuminating Engineering Society

## Standards Being Considered for Reaffirmation

Engineering and Scientific Charts for Lantern Slides, Z15.1-1932

Time-Series Charts, Manual of Design and Construction, Z15.2-1938

Engineering and Scientific Graphs for Publications, Z15.3-1943

*Sponsor:* American Society of Mechanical Engineers

Manhole Frames and Covers for Subsurface Structures, A35.1-1941

*Sponsors:* American Society of Civil Engineers; ASA Telephone Group

## New Project Being Considered

Steel Raceways for Electrical Wiring Systems

## Standards Submitted for Approval

Electricity Meters, Code for (Revision of C12WS-1942)

*Sponsors:* Electric Light and Power Group; National Bureau of Standards, U.S. Department of Commerce

Machine Pins, B5

*Sponsors:* American Society of Mechanical Engineers; Metal Cutting Tool Institute; National Machine Tool Builders' Association; Society of Automotive Engineers

Photographic Densities in Motion Pictures, Z22.27

*Sponsor:* Society of Motion Picture Engineers

## New Project Initiated

Standards in Optics

# News About

# ASA Projects

## Acoustical Measurements and Terminology, Z24—

*Sponsor:* Acoustical Society of America

During the spring meeting of the Acoustical Society which will be held in New York this month, three subcommittees, as well as various subgroups, will convene. One of the particularly important questions on the agenda will be that of establishing basic reference levels for sound level measurements. For the first time, a subgroup will meet in an attempt to formulate a standard for measuring the performance characteristics of loud speakers. Subcommittee B is planning to consider three draft standards for laboratory microphones, method of calibration of laboratory microphones, and a production test method for earphones. Subgroups have been working on this material for about a year but this is the first opportunity that the subcommittee has had to review it.

## Coordination of Dimensions of Building Materials and Equipment, A62—

**Sponsors:** American Institute of Architects; The Producers' Council

A proposed standard on providing sizes of clay flue linings, A62.4, on the basis of the 4-inch standard module for coordination of building materials and equipment is now under study by Committee A62 and may be submitted to the ASA in June.

## Electric Measuring Instruments, C39—

**Sponsor:** Electrical Standards Committee

Since last September, Subcommittee 2 on interchangeability of electrical indicating instruments has been working on a revision of the American Standard for Electrical Indicating Instruments, C39.1-1938. While work has not been completed, this subcommittee has succeeded in covering basic requirements for 1½-, 2½-, 3½-, 4½-inch round and rectangular panel-type instruments. The purpose of the sectional committee meeting scheduled this month will be to review the work accomplished to date and to advise and direct the subcommittee in procedure for the future.

## Electricity Meters, C12—

**Sponsors:** Electric Light and Power Group; National Bureau of Standards, U.S. Department of Commerce

A revision of the American Standard Code for Electricity Meters, C12-1941, has been submitted to the ASA for approval. This recommendation provides for a longer period of time between the tests required under the code for all electricity meters. It incorporates in the peacetime standard the revision made in 1942 under the War Standards procedure. At that time, because utility meter departments had depleted staffs of skilled testers, a revised paragraph (827) had been written into the code to save manpower by permitting fewer tests to be carried out over a longer period of time.

## Glass Bulbs and Molded Glass Flares, C79—

**Sponsor:** Electrical Standards Committee

This sectional committee has unanimously approved two draft standards: Proposed American Standard Nomenclature for Molded Glass Flares Intended for Use With Electron Tubes and Electric Lamps, C79.1/4, and Proposed American Standard Nomenclature for Glass Bulbs Intended for Use With Electron Tubes and Electric Lamps, C79.2/7.

## Graphical Symbols and Abbreviations for Use on Drawings, Z32—

**Sponsors:** American Institute of Electrical Engineers; American Society of Mechanical Engineers

A canvass is now being taken of engineers and contractors interested in heating, ventilating, and air conditioning to obtain criticisms and suggestions on a list of 50 mechanical symbols already assembled for possible approval as standard.

## Mercury Arc Rectifiers, C34—

**Sponsor:** American Institute of Electrical Engineers

Recent use of the report of the Proposed Standards for Pool-Cathode Mercury-Arc Power Converters published by the American Institute of Electrical Engineers for comment and criticism indicates that Section 2.110 requires an unnecessary increase in transformer size and results in excessive transformer cost. This particularly affects railroads, steel companies, and mining groups who have the most use for it in converting from alternating current to direct current. Therefore, a subcommittee has been appointed to study this question and report back to the sectional committee any recommendations for change.

## Motion Picture Standards, Z22—

**Sponsor:** Society of Motion Picture Engineers

The following drafts of new and revised standards have been approved by the sectional committee and are now being submitted to the ASA with the recommendation that they be approved as American Standard:

Proposed Revision of American Standard Dimensions for 16-Tooth 35-Millimeter Motion Picture Projector Sprockets, Z22.35-1930, to be designated Z22.35/49

Cutting and Perforating Negative and Positive Raw Stock for 16-Mm Silent Motion Picture Film, Z22.5-1941 (to be known as Cutting and Perforating Dimensions for 16-Mm Silent Motion Picture Negative and Positive Raw Stock, Z22.5/45)

Cutting and Perforating Negative and Positive Raw Stock for 16-Mm Sound Motion Picture Film, Z22.12-1941 (to be known as Cutting and Perforating Dimensions for 16-Mm Sound Motion Picture Negative and Positive Raw Stock, Z22.12/47)

Cutting and Perforating Negative and Positive Raw Stock for 8-Mm Motion Picture Film, Z22.17-1941 (to be known as Cutting and Perforating Dimensions for 8-Mm Motion Picture Negative and Positive Raw Stock, Z22.17/43)

Cutting and Perforating Positive Raw Stock for 35-Mm Motion Picture Film, Z22.36-1944 (to be known as Cutting and Perforating Dimensions for 35-Mm Motion Picture Positive Raw Stock, Z22.36/46)

Proposed American Standard Nomenclature for Motion Picture Film Used in Studios and Processing Laboratories, Z22.56

16-Mm Silent Film; Emulsion Position in Projector—Positive (For Direct Front Projection), Z22.10-1941 (to be known as Emulsion Position in Projector for Direct Front Projection of 16-Millimeter Silent Motion Picture Film, Z22.10/59)

16-Mm Sound Film; Emulsion and Sound Record Positions in Projector—Positive (For Direct Front Projection), Z22.16-1941 (to be known as Emulsion and Sound Record Positions in Projector for Direct Front Projection of 16-Millimeter Sound Motion Picture Film, Z22.16/60)

8-Mm Silent Film; Emulsion Position in Projector—Positive (For Direct Front Projection), Z22.22-1941 (to be known as Emulsion Position in Projector for Direct Front Projection of 8-Millimeter Silent Motion Picture Film, Z22.22/61)

## Photography, Z38—

**Sponsor:** Optical Society of America

A letter ballot is now being taken of this sectional committee on 13 proposed American Standard photographic specifications covering alkalies, sulfites, and fixing agents. This is the first group of chemical standards to be proposed in the photography field.

A high degree of purity is essential for chemicals used in photographic processing because of the damaging effect on film and finished photographs of even a small amount of certain impurities. In some cases, however, a larger amount can be permitted for photographic chemicals than for pharmaceutical chemicals or analytical reagents. The new series of standards which will cover developing agents, restrainers and anti-foggants, acids, hardeners, and chemicals for miscellaneous use, in addition to 13 standards now being considered, will define the content of the chemicals to be used and the tolerances for the amount of impurities permitted. Methods of test by which to determine whether the chemicals meet the standards are also included.

## Radio Interference—

A special committee of the International Electrotechnical Commission to determine methods of measuring radio interference has been reactivated since the end of the war. A meeting of this special committee was held in London in November and a report of the conclusions arrived at are now available. The United States was represented by Leonard Thomas, U. S. Navy Department; C. C. Chambers, University of Pennsylvania; and W. Hopkins, Stoddard Aircraft Corporation. Future work in this connection in the United States will be taken care of by the newly reorganized ASA Sectional Committee on Radio-Electrical Coordination, C63. A technique for measuring interference in the frequency range up to 20-30 megacycles has been tentatively agreed upon. In the frequency range above 20-30 megacycles, a tentative agreement was reached on the bandwidth to be used but little progress has been made toward developing a measuring technique. Recommendations for further study on this problem have been made. Another meeting is scheduled for September in Switzerland.

## Standards for Electric Lamps, C78—

**Sponsor:** Electrical Standards Committee

Subcommittee 1 on Incandescent Lamps and Subcommittee 2 on Electric Discharge Lamps each reviewed lamp tables and drawings relative to their respective projects at their last meetings. With the changes which were recommended at that time, it is hoped that the new draft standards will soon be ready for submittal to the sectional committee.

## Auto Sizes and Weights

Recommendations on motor vehicle sizes and weights of the American Association of State Highway Officials have been accepted by the American Association of Motor Vehicle Administrators.

# New American Standards Available

American Standards Association

• ASA •

70 East 45th Street, New York 17, N. Y.

| No. of Copies | ASA Number    | Title and Description of Standard  | Price  |
|---------------|---------------|--|--------|
| .....         | A42.1-1946    | <b>Gypsum Plastering Including Requirements for Lathing and Furring, Specifications for</b> .....<br>This standard provides complete specifications on material requirements and application procedures.   | \$ .35 |
| .....         | B16.11-1946   | <b>Steel Socket-Welding Fittings</b> .....<br>Dimensions, finish, tolerances, testing, marking, and minimum requirements for socket dimensions for wrought carbon and alloy-steel welding fittings are covered in this American Standard.  | .60    |
| .....         | B16.15-1947   | <b>Brass or Bronze Screwed Fittings, 125 Lb.</b> .....<br>This standard covers requirements on pressure-temperature ratings, size, marking, materials, threading, ribs, fitting dimensions, patterns, and tolerances for brass or bronze screwed fittings.                           | .65    |
| .....         | K18.1-1946    | <b>Laboratory Sampling and Analysis of Coal and Coke, Methods of (ASTM D 271-46)</b> .....<br>Preparation of laboratory samples and procedures for the analysis of coal and coke are covered in this latest revision of the standard.  | .25    |
| .....         | K26.1-1946    | <b>Lampblack, Specifications for (ASTM D 209-46)</b> .....<br>The composition and properties of lampblack as a dry pigment, paste in oil, or paste in japan are given in this revision of the 1941 edition.  | .25    |
| .....         | K29.1-1946    | <b>Iron Blue, Specifications for (ASTM D 261-46)</b> .....<br>This revised standard covers the composition and properties of the pigment commercially known as Prussian blue, Chinese blue, Milori blue, or iron blue.   | .25    |
| .....         | K36.1-1946    | <b>Bone Black, Specifications for (ASTM D 210-46)</b> .....<br>Requirements for bone black in the dry form or as a paste in oil or in japan are set forth in this revised edition.   | .25    |
| .....         | K37.1-1946    | <b>Chrome Oxide Green, Specifications for (ASTM D 263-46)</b> .....<br>The specifications for the composition and properties of chrome oxide green as a dry pigment or as a paste in oil are contained in this revised standard.   | .25    |
| .....         | Z32.12-1947   | <b>Basic Graphical Symbols for Electric Apparatus</b> .....<br>Basic symbols and symbol components necessary to depict electrical devices on drawings in power, control, and communication are covered in this American Standard.  | .40    |
| .....         | Z32.13-1946   | <b>Abbreviations for Use on Drawings</b> .....<br>Abbreviations for use on drawings for approximately 2,000 terms and the basic principles for their use are the contents of this new American Standard.   | 1.00   |
| .....         | Z38.1.25-1947 | <b>Industrial X-Ray Sheet Film (Inch Sizes), Dimensions for</b> .....  | .15    |
| .....         | Z38.1.26-1947 | <b>Graphic Arts Sheet Film (Inch Sizes), Dimensions for</b> .....  | .15    |
| .....         | Z38.1.27-1947 | <b>Medical X-Ray Sheet Film (Inch and Centimeter Sizes), Dimensions for</b> .....  | .15    |
| .....         | Z38.1.28-1947 | <b>Professional Portrait and Commercial Sheet Film (Inch Sizes), Dimensions for</b> .....<br>The above four revisions of the 1944 editions are part of the series of American Standards for Photography (other than Cinematography).   | .15    |
| .....         | Z38.2.3-1947  | <b>Sensitometry of Photographic Papers</b> .....<br>A method of determining the sensitometric characteristics of developing-out, black-and-white, photographic papers intended for contact or projection printing of continuous-tone picture negatives is provided in this standard. | .30    |

**ASA COMPANY MEMBERS** *are entitled to one free copy of each newly approved American Standard for the first \$50 of annual membership, and an additional copy for each \$100 beyond this. These standards can be obtained through your company representative. We will be glad to give you his name, if necessary.*